DOCUMENT RESUME

ED 482 836 SP 041 812

TITLE	U.S. Teens in Our World: Understanding the Health of U.S. Youth in Comparison to Youth in Other Countries.
INSTITUTION	Department of Health and Human Services, Washington, DC.
PUB DATE	2003-00-00
NOTE	104p.
AVAILABLE FROM	HRSA Information Center, 2070 Chain Bridge Road, Suite 450, Vienna, VA 22182-2536. Tel: 703-442-9051; Tel: 888-ASK-HRSA (Toll Free); Web site: http://www.hrsa.gov. For full text: http://www.mchirc.net/HTML/us_teens/main_pages/ toc.htm.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC05 Plus Postage.
DESCRIPTORS	*Adolescents; Cultural Differences; *Cultural Influences; Drinking; Educational Environment; Foreign Countries; *Health Behavior; Parent Child Relationship; Peer Relationship; Physical Fitness; Physical Health; Secondary Education; Smoking; Student Characteristics; Violence; Well Being

ABSTRACT

This chartbook investigates areas where U.S. adolescents' health or health-related behaviors emerged as significantly different from those of adolescents in other counties in positive, negative, or suggestive directions. Data come from the international Health Behavior in School-aged Children (HBSC) study, which has coordinated comparable, nationally representative school-based surveys of teens every 4 years since 1985-86. The HBSC study examines adolescent health and health-related behavior in the context of family, school, and peers, using international comparisons to demonstrate common factors and highlight differences associated with cultural influences. This report provides data on teens age 15 years old, although the study addresses teens age 11, 13, and 15 years. Results are presented on: (1) "Health and Well-Being"; (2) "Fitness"; (3) "Family and Peer Relationships"; (4) "School Environment"; (5) "Smoking and Alcohol Use"; and (6) "Violence." Overall, U.S. youth are more likely to have stomachaches, headaches, backaches, and difficulty sleeping than students in most other countries, possibly related to fitness levels. U.S. students find it easy to make new friends but are among the least likely to consider students in their classrooms kind and helpful. U.S. youth are less likely to smoke than students in most countries. They rank relatively high for never or rarely feeling safe at school. (Chapters contain references.) (SM)

Reproductions supplied by EDRS are the best that can be made from the original document.

ED 482 836

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

U.S.
Teens in Our World

Understanding the Health of U.S. Youth in Comparison to Youth in Other Countries

Department of Health and Human Services
HRSA
Health Resources and Services Administration
Maternal and Child Health Bureau

041818

BEST COPY AVAILABLE

Please note that U.S. Teens in Our World is not copyrighted. Readers are free to duplicate and use all or part of the information contained in this publication.

Suggested Citation:
U.S. Department of Health and Human Services, Health Resources and Services Administration. *U.S. Teens in Our World* Rockville, Maryland: U.S. Department of Health and Human Services, 2003.

This publication is available online at http://www.hrsa.gov
Single copies of this publication are also available at no charge from the
HRSA Information Center
2070 Chain Bridge Road, Suite 450
Vienna, VA 22182-2536
703-442-9051 or 1-888-ASK-HRSA

TABLE OF CONTENTS

Executive Summary 5
Executive Summary 6
References 9

Introduction 11
Introduction 12
Backgound 14
Statistical Methods 14
References 15

Chapter One: Health and Well-Being 17
Overall Health and Well-Being 18
Feeling Healthy 19
Quality of Life 19
Symptoms 21
Medication Use 24
What Didn't We Know 25
References 26

Chapter Two: Fitness 28
Fitness 29
Physical Activity 30
Leisure-Time Activities 31
Nutrition 32
What Didn't We Know 34
References 36

Chapter Three: Family and Peer Relationships 38
Family and Peer Relationships 39
What Didn't We Know 43
References 45

Chapter Four: School Environment 47
School Environment 48
What Didn't We Know 53
References 55

Chapter Five: Smoking and Alcohol Use . . 58
Smoking and Alcohol Use 59
What Didn't We Know 63
References 66

Chapter Six: Violence 69
Violence 70
What Didn't We Know 74
References 78

What Was Left Out 81
U.S. Specific Items 84
Bias 86
References 87

Summary 90
Summary 91
What Did We Learn 91
What Was Left Out 97
What Research Shows 98
Supportive Programs and Prevention 100
References 102

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The international Health Behavior in School-aged Children (HBSC) study has coordinated comparable, nationally representative school-based surveys of teens every four years since 1985-86. The overarching goal of the HBSC study is to understand adolescent health and health-related behavior in the context of family, school, and peers, using international comparisons to demonstrate common factors and highlight differences associated with cultural influences. These international comparisons show health-related characteristics that are common to adolescents at specific developmental stages regardless of nationality. Individual differences between countries highlight the health attributes and behaviors that suggest more local cultural, environmental, or socio-demographic influences. The United States participated in the HBSC study for the first time in 1998 in order to improve adolescent health through programs and research targeted to provide appropriate health-related services. An international report includes comparisons of student attributes and some limited analyses across these attributes to describe consistent health and behavioral patterns for teens in the 29 countries or regions performing the survey in 1997-98.[1] By viewing our youth's health within the context of family, school, peers, and culture, we learn more about the larger community within which U.S. programs must work to be effective.

This chartbook investigates areas where U.S. adolescents' health or health-related behaviors emerged as significantly different from those of adolescents in other countries in positive, negative, or suggestive directions. Specifically, we ask:

- *What important information did we learn about common adolescent health characteristics, and about U.S. adolescents specifically, that we didn't already know?*
- *What relevant U.S. or international research addresses the factors underlying the highlighted health issues?*

Comparisons in this report are limited to age 15 due to space restrictions, although the study addresses teens through developmental stages at ages of 11, 13 and 15 years. The international report describes all ages, including developmental aspects. This U.S. report discusses pertinent age-related differences, particularly when trends for U.S. students differ from patterns in other countries. Findings are organized within the topics of general health and well-being, fitness, family and peer relationships, school relationships, smoking and alcohol use, and violence.

Relative country rankings of student attributes show a number of commonalities across countries, including consistent gender differences. The differences found for U.S. students may direct us to areas requiring further research and programmatic attention. They also point to areas where U.S. programs and policies appear to show successful reductions in unhealthy behaviors. Some of the more important differences are highlighted below:

- U.S. youth are more likely to have stomachaches, backaches, headaches and difficulty sleeping at least once a week than students in almost all other HBSC countries. U.S. students are also more likely to feel tired in the morning or feel low compared to students in other countries. These symptoms may be associated with our students' general fitness levels related to diet and exercise, since we are also more likely to eat items such as french fries or to drink sodas with sugar, while generally exercising in the mid- to lower range. Symptoms may also stem from other activities and school schedules not measured or analyzed in the HBSC.

- Research cited in each of the chapters shows that appropriate supportive networks are critical for positive development of health and healthy behaviors. The ability of parents to provide support in the U.S. may be relatively limited by the high proportions of students living with either single parents or step-parents. Communication with parents appears to be more difficult for our students, both with mothers and fathers, with far greater difficulty reported in communicating with fathers than mothers and particularly for boys.

- U.S. students find it easy to make new friends, while they are among the least likely to find students in their classrooms to be kind and helpful. U.S. students rank second in reports of feeling a lot of pressure from school; at the same time, their perceptions of their own performance is very high compared to other students in their classes. Our students are no more likely than students in other countries to feel that either teachers or parents expect too much of them at school, and rank tenth highest in feeling that students are treated too severely or strictly at their school. The proportion of U.S. students who are enthusiastic about school is among the best of countries, even though about four out of five U.S. students like school only a little, not very much, or not at all. Across all countries girls like school and consider rules to be fair more often than boys. However, U.S. students are among the least likely to feel that they participate in making rules at school.

- Comparisons of U.S. student substance use (smoking and drinking) are generally positive, but with somewhat mixed results. Our 15-year-old youth are less likely to smoke than students in almost all other countries and rank in about the middle range for drinking alcohol at least once a week. The latter finding is consistent with our ranking for students who have been drunk at least twice.

- U.S. students rank relatively high for never or rarely feeling safe at school. Fewer than two out of five U.S. students always feel safe. Our students rank in about the middle among students who are bullied at school at least sometimes. However, we rank ninth at ages 11 and 15 and seventh at age 13 among all countries for students who are bullied frequently (at least once a week or more often) at school. Our students are also among the higher ranking countries for students who report that they bully others frequently. Among the few countries asking about fighting or weapon carrying (gun, knife or club) for self protection, U.S. students are no more likely to fight or carry weapons. Like students in other countries, U.S. students are more likely to fight with friends, family members or acquaintances than with strangers.

Analyses based only on U.S. HBSC survey data have already refocused our attention to issues affecting U.S. students. For example, studies on the prevalence and psychosocial effects of bullying behavior in U.S. teens, together with violence related to bullying, support work to mitigate this behavior. Our data show about 30 percent of U.S. students in grades six to ten report moderate or frequent (weekly) involvement in bullying, either at school or away.[2] This study demonstrates the differences in psychosocial attributes of students who bully others, are bullies, or are both bullies and victims of bullying. U.S.

students involved in bullying are more likely to participate in violent behavior, including weapon carrying and frequent fighting.[3] Students involved in frequent bullying (as either the bully or the victim) are more likely than other students to report carrying a weapon for protection either at school or away. The likelihood of weapon-carrying is particularly high when students either bullied others or were bullied away from school grounds. Bullies (including bullies who are also bullied) were most likely to carry weapons for self-defense.

The international study does not address issues related to race, ethnicity, or immigration. Historical immigration patterns and the extent of diversity is quite different in the U.S. compared to most European countries. Both published[4] and preliminary analysis of the U.S. HBSC data on youth living in homes where the primary language spoken is other than English shows they are more likely to have psychosocial problems and feel a lack of connectedness compared to non-Hispanic white English-speakers. Adolescents who speak other languages at home, exclusively or in combination with English, are particularly likely to report feelings of vulnerability, exclusion, and lack of confidence, such as alienation from classmates, being bullied at school, and concerns about school and parental support. However, preliminary analysis of the U.S. HBSC data on Asian American students who spoke languages other than English at home also shows them to be less likely to use substances such as cigarettes, chewing tobacco, marijuana, or to have ever experimented with alcohol, indicating that lower levels of acculturation may also be protective for some high-risk behaviors.

International and U.S. analyses from the HBSC and the more in-depth longitudinal, multi-level research of the U.S. Adolescent Health Study show that feelings of support and connectedness to family, school, and peers are highly associated with positive health and behaviors.[1,5,6] Whether addressing health and depressive symptoms, fitness, diet, attitudes toward school, smoking and alcohol use, or violence, research demonstrates that students' feeling of being connected to positive support systems-familes, schools, neighborhoods and communities-makes a difference.[7,8]

The interactions among personal attributes, health behaviors, family and peer networks, and larger cultural influences are difficult to measure.[9] Adolescent health behaviors measured between ages 11 and 15 years reflect not only genetic, family, and early and middle childhood exposures,[10] but individual effects, such as puberty and maturation, and direct interactions with peers, neighborhoods, and communities. The HBSC is attempting to measure the maturational and neighborhood effects in subsequent surveys to address the complex interactions of biological, social, and physical environmental factors through the various developmental stages of children and youth. The Strategic Plan of National Institute of Child Health and Human Development (NICHD) states that there is little comprehensive research on adolescence, despite the many important neurobiological, hormonal, and social behavior interactions to be addressed during transitions into, from, and throughout this developmental period.[11] Recommendations synthesizing lessons learned in a review of research study findings were published in a report sponsored by the Health Resources and Services Administration's Maternal and Child Health Bureau (HRSA/MCHB).[12] Cross-cutting themes identified as priorities for directions of future adolescent research include: 1) applying a developmental perspective; 2) emphasizing health; 3) using multiple influence models for understanding and improving health and development; and 4) recognizing the diversity of the adolescent population.

Differences pertinent to U.S. students, such as those highlighted in this chartbook, direct attention to U.S. programs and support their attempts to address health-related factors based on appropriately targeted research which has been evaluated for effectiveness. Prevention strategies and interventions targeted to teens become more complex when considering the issues identified as priorities for research listed above and the multiple venues within which youth interact. A national committee of experts assessed programs that may serve as models to promote positive outcomes in youth by identifying community interventions with sufficiently strong evidence of effectiveness.[7] These programs are located in communities in which youth live, including both geographic communities and those based on family connections and shared interests or values, including schools, since many of the best-regarded programs craft explicit links with both home and school. For example, two U.S. studies on bullying using HBSC data show that the risk of weapon carrying and fighting are higher for students involved in bullying away from school grounds than at school.[2,3] International comparisons and studies of violence or bullying occurring only at school do not provide sufficient breadth to understand bullying and violence within the context of a youth's activities away from school, in the community, and at home. Not only do we need to address bullying behavior in school, but the findings direct us to learn more about where, how, and why these events occur in order to address future preventive program efforts effectively. The school environment as either a formal or informal venue for promoting healthy behaviors is appropriate and necessary, but probably not fully sufficient for successful interventions.[7]

HBSC comparisons of smoking behavior are a good example of positive changes resulting from effectively targeted research and programs. At age 15, U.S. students are ranked among those least likely in all HBSC countries to smoke daily, consistent with U.S. surveillance reports of decreases in teen smoking during the last several years.[13,14] U.S. students' ranking for daily smoking at age 15 is low, even though our students are as likely to experiment with smoking as students in other countries. After 25 years of attempting to reduce smoking among our youth, evaluation of interventions concludes that no single strategy has been successful, and multiple approaches at the population and individual levels have the greatest chance of success.[7]

A joint effort of HRSA/MCHB and the Centers for Disease Control and Prevention supports collaborative action at the community, State, and national levels to elevate the national focus on the health and well-being of adolescents and young adults through the National Initiative to Improve Adolescent Health.[15] Together with NICHD, they are addressing the underlying supportive networks required to improve adolescent health, as demonstrated through the research and findings described in this chartbook. The two sponsoring agencies of the HBSC study, NICHD and HRSA/MCHB, are responsible, respectively, for conduct of research on the causes and prevention of disease and health behaviors leading to poor adolescent health[11] and for promoting and improving the health of adolescents through effectively targeted programs.[16] The HBSC focus on adolescents within the context of family, school, peers, neighborhood, community and culture contributes to the efforts to provide targeted research to aid effective programs.

REFERENCES:

1. Currie C, et al. (eds.) Health and Health Behaviour among Young People. WHO Policy

Series: Health Policy for Children and Adolescents, Issue 1. (Available at http://www.hbsc.org)

2. Nansel TR, Overpeck MD, Pilla RS, Ruan WJ, Simons-Morton BG. Bullying behaviors among the U.S. youth: Prevalence and association with psychosocial adjustment. JAMA 2001; 285(16):2094-2100.

3. Nansel TR, Overpeck MD, Ruan WJ, Haynie DL, Scheidt PC. Relationships between bullying and violence among US youth. Arch Pediatric Adolescent Medicine (in press).

4. Yu SM, Huang ZJ, Schwalberg RH, Overpeck M, Kogan MD. Acculturation and the health and well-being of U.S. immigrant adolescents. J Adolescent Health (in press).

5. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997; 278:823-832.

6. McNeely CA, Nonnemaker JM, Blum RW. Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. J School Health 2002; 72:138-146.

7. National Research Council and Institute for Medicine. Community Programs to Promote Youth Development. Committee on Community-Level Programs for Youth. J Eccles and JA Gootman, eds. Board on Children, Youth and Families, Division of Behavioral and Social Sciences and Education. Washington DC: National Academy Press, 2002.

8. Demographic and Behavioral Sciences Branch. Research on Today's Issues: Strong school, family ties protect teens from violence, drugs, suicide and early sex. Briefing Papers, Issue No. 8. Bethesda, MD: National Institute of Child Health and Human Development, 1998.

9. National Academy of Sciences Committee on Health and Behavior. Health and Behavior: The interplay of biological, behavior, and societal influences. Washington, DC: National Academy Press, 2001. (Available at http://nap.edu.)

10. National Research Council and Institute of Medicine Committee on Integrating the Science of Early Childhood Development. From Neurons to Neighborhoods: The Science of Early Childhood Development. Washington, D.C.: National Academy Press, 2000.

11. National Institute of Child Health and Human Development. From Cells to Selves: Strategic Plan 2000. (Available at http://www.nichd.nih.gov/strategicplan/cells/strategicplan.pdf).

12. Millstein SG, Ozer EM, Brindis CD, Knopf DK, Irwin CE. Research Priorities in Adolescent Health: An analysis and synthesis of research recommendations. San Francisco, CA: University of California, San Francisco. National Adolescent Health Information Center, 1999.

13. National Institute on Drug Abuse and University of Michigan Institute for Social Research. Monitoring the Future Study. (Available at: http:nida.nih.gov/drugpages/MTF and http://www.monitoringthefuture.org.)

14. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance-United States, 2001. Morbidity and Mortality Weekly Report 2002; 51(SS-4).

15. Healthy People 2010. Critical Objectives for Adolescents and Young Adults. (List available at http://youth.ucsf.edu/nahic.)

16. Health Resources and Services Administration Maternal and Child Health Bureau. (Program goal descriptions available at: http://www.hrsa.mchb.gov.)

INTRODUCTION

INTRODUCTION

The international research study of Health Behavior in School-aged Children (HBSC) has conducted nationally representative surveys every four years since the 1985-86 school year. A growing number of countries in Europe, North America, and the Middle East are participating. In 1997-98, the U.S. performed their first national survey to obtain comparable measures. Like other international studies, such as those on math and science achievement, the HBSC produces comparative international data that allow participating nations to identify their strengths and weaknesses and to develop strategies for improving their performance.[1] Beyond comparisons of individual health-related behaviors, the goal of the HBSC is to gain new insight into, and increase understanding of, adolescent health behaviors, health, and lifestyles in their social context for the purpose of providing scientific evidence for program and policy efforts.

The purpose of this chartbook is to investigate areas where U.S. adolescents' health or health-related behaviors emerged as significantly different from those of adolescents in other countries. A much more comprehensive international report includes comparisons of student attributes and some limited analyses across these attributes to describe consistent health and behavioral patterns for adolescents in the 29 countries or regions performing the survey in 1997-98.[1] Differences pertinent to U.S. students, such as those highlighted in this chartbook, raise critical questions about the underlying factors resulting in health and health behaviors that affect our students. In some cases, the health behavior of U.S. students may be better than in most other countries and we can assess the efforts successfully applied to achieve our position. In other cases, the health and behaviors are much worse, and we may be able to look at related characteristics of students in other countries to understand more about the effects of our own culture. Specifically, we are asking:

> *1) What important information did we learn about U.S. adolescents that we didn't already know; and*
>
> *2) What relevant U.S. or international research addresses the factors underlying the highlighted health issues?*

By viewing the adolescent in a developmental continuum nested within the context of family, school, peers, and culture, the HBSC offers opportunities to understand the larger community within which U.S. research and programs must work to be effective. Students in the study represent average ages of 11, 13, and 15 years, allowing international comparisons beginning at early pubertal development stages through mid-adolescence, when choices and behaviors are more entrenched. By age 15, many health-related attributes, such as nicotine addiction or being overweight, have become precursors of adult diseases, including respiratory afflictions, cancer, and heart disease. As a research consortium, the HBSC investigators emphasize the need to understand how the developmental stages of adolescence interact with the cultural, social, and physical community.

HBSC goals are consistent with the developmental emphasis of the two agencies sponsoring the HBSC in the U.S.: the Health Resources and Services Administration's Maternal and Child Health Bureau (HRSA/MCHB) and the National Institute of Child Health and Human Development (NICHD). A recent report sponsored by HRSA/MCHB on research priorities for adolescent health stressed understanding interactions of physical, psychological, and social development within social and environmental contexts.[2] The Strategic Plan of NICHD states that there is little comprehensive research on adolescence, despite the many important neurobiological, hormonal, and social behavior interactions to be addressed during transitions into, from, and throughout this developmental period.[3]

A recent report on current knowledge of the interplay of biological, behavioral, and societal influences on links between health and behavior emphasized the complexity of relating these multiple influences to specific interventions to reduce unhealthy behavior.[4] The HBSC research study, which compares adolescent health and behaviors within the social context of multiple cultures and country structures, cannot address this complexity either. However, it does provide new suggestions to help us understand how our own U.S. culture and the structure of family and schools may influence adolescent health and behavior. Programs to promote healthy youth development are fielded and supported at many levels, but their effectiveness is difficult to determine. The National Research Council and Institute of Medicine established a committee to identify community programs with sufficiently strong evidence of success to suggest that they could serve as models for enhancing youth development programs.[5] They found that the research base is just becoming comprehensive enough to allow tentative conclusions about how individual student assets lead to positive development and the characteristics that support these assets. Again, the HBSC study, describing individual health behaviors within the family, peer, and school social context, will not provide sufficient information to validate intervention programs. However, much of the research addressed in the HBSC is based on studies in both North America and Europe that have indicated how supportive social environments influence the individual adolescent health behaviors described in this chartbook.

The U.S. sponsors several other continuous surveys to monitor changes in adolescent health indicators for the older age ranges, including the Youth Risk Behavior Survey (YRBS) and Monitoring the Future.[6,7] The indicators from these and other surveys or vital records are used to perform surveillance and measure progress toward our goals for adolescent health, as described in *Healthy People 2010 and America's Children*.[8,9,10] Research findings from the nationally representative National Longitudinal Study of Adolescent Health (AddHealth), a school-based survey based on follow-up of students and their parents initiated in 1994, are adding both contextual and developmental depth.[11] HBSC data complement these surveillance systems and provide family, peer, school, and community context for research on attributes influencing the currently available indicators by which we measure progress in the U.S. As a cross-sectional study of students at ages 11, 13 and 15 years, the HBSC does not follow individual students through their developmental stages for an in-depth understanding of the interface between biological and social influences. Although such longitudinal studies have been conducted on the community level, national studies are needed.

The HBSC data presented in this chartbook are based on nationally representative school-based surveys performed in 29 countries or regions in the 1997-98 school year. An extensive comparison of health-related measures collected for the three age groups is available for reference and further detail in an international HBSC publication or from specific research based on fewer countries who asked optional topic-specific questions in a consistent manner.[1] This chartbook highlights and discusses only those health measures that show important differences for U.S. students. Graphical presentation is limited to age 15 to conserve space. In instances where cross-country comparisons varied across the ages of 11, 13 and 15, the differences are noted, with reference made to the larger international report. Specifically, the measures are organized within the topics of general health and well-being, fitness, family and peer relationships, school relationships, smoking and alcohol use, and violence. A synthesis of current programs and the research underlying the programs addresses whether program and/or research objectives are specific to documented underlying factors affecting the measures.

Our goal is to learn more about U.S. adolescent health status as highlighted through comparisons to other developed countries and describe current U.S. research which addresses these health-related measures in order to improve adolescent health. The target audiences of this chartbook include program and policy officials, researchers, health professionals, school administrators, school health educators and staff, parents, and students. As with most successful changes in the health of our population, multifaceted efforts incorporating education, support of the individual to access means for change, and legislation require that we all work together to improve adolescent health. Support for our children, adolescents, and families in maintaining healthy lives within the larger community should be assisted by HBSC research, based on seeing ourselves from the outside.

BACKGROUND

The HBSC study includes nationally representative surveys of students at ages 11, 13, and 15 years of age across countries.[1] The HBSC has been conducted every four years, starting in 1985-86, with a growing number of countries involved. Twenty-nine countries and regions participated in the 1997-98 school-year survey. NICHD sponsored the 1997-98 U.S. survey, in collaboration with HRSA/MCHB, which has responsibility for fielding the HBSC study for future survey rounds.

The survey performed in the 1997-98 school year included questions that were mandatory for all 29 participating countries and regions. The questions were pretested and translated into country-specific language to measure the same construct in each country, if possible.[12] Any deviances from the exact wording of the questions are noted, if any. Wording was changed only if the definitions were different; e.g., 'chips' is the name used in most European countries for potatoes fried in a manner similar to french fries in the U.S. while 'potato crisps' are the equivalent of potato chips in the U.S. These deviances are described further in HBSC documentation, which is available elsewhere.[1,5] In addition to the mandatory questions, optional questions on specific topics were fielded in some countries yielding comparisons for fewer countries, but allowing each country to address issues considered to be of high importance. The U.S. included questions on violence and injury, with comparisons to countries collecting the same data presented here.[13]

Topics in the chartbook were selected based on the general criterion that the U.S. measures fall in the top or bottom third of the 29 countries, with generally significant differences among countries when ranked by proportions of 15-year-old students with the particular attribute. If most of the countries, including the U.S., have similar attributes of a general topic, they are not included in the chartbook but may be found in the complete international report.[1]

STATISTICAL METHODS

Significant differences between an attribute measured across countries are based on the sample design requirements for participation in the HBSC. Surveys are performed in a single classroom within a school. Student characteristics within a single classroom tend to be similar (clustered). Given a clustered school-based representative sample design, countries are required to include a minimum sample size for each of the three age groups (about 1,500 per age group), estimated to produce a 95 percent confidence interval of ±3 percent around a proportional estimate of 50 percent and a design factor of 1.2. The design factor is a ratio estimate of amount of variance due to the clustered sample design compared to the variance if the surveys were based on simple random samples of individual students. The sample design criteria can be found, with examples, in the international report for 1997/98, referenced above. Variance estimates obviously vary for each variable and within each country. However, the following guidelines may be used for very approximate 95 percent confidence intervals around proportions shown in the chartbook:

Proportion of Interest (%)	**Confidence Interval (%)**
5	±1.9
10	±2.6
15	±3.1
20	±3.4
25	±3.7
30	±3.9
35	±4.1
40	±4.2
45	±4.3
50	±4.3

REFERENCES:

1. Currie C, et al. (eds.) Health and Health Behaviour among Young People (International Report from the HBSC 1997/98 Survey). WHO Policy Series: Health policy for children and adolescents. Issue 1, 2000. (Available on the HBSC Website at http://www.hbsc.org)

2. Millstein SG, Ozer EM, Brindis CD, Knopf DK, Irwin CE. Research Priorities in Adolescent Health: An analysis and synthesis of research recommendations. San Francisco, CA: University of California, San Francisco, National Adolescent Health Information Center, 1999.

3. National Institute of Child Health and Human Development. From Cells to Selves: Strategic Plan 2000. (Available at http://www.nichd.nih.gov/strategicplan/cells/strategicplan.pdf.)

4. National Academy of Sciences Committee on Health and Behavior. Health and Behavior: The interplay of biological, behavior, and societal influences. Washington, DC: National Academy Press, 2001. (Available at http://nap.edu.)

5. National Research Council and Institute of Medicine. Community Programs to Promote Youth Development. Committee on Community-Level Programs for Youths. Eccles J, Gootman JA, eds. Washington, DC: National Academy Press, 2002.

6. National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Survey. Atlanta, GA: Centers for Disease Control and Prevention. (Description available at http://www.cdc.gov/nccdphp/dash.)

7. National Institute on Drug Abuse and University of Michigan Institute for Social Research. Monitoring the Future Study. (Description available at http://www.nida.nih.gov/drugpages/MTF and http://www.monitoringthefuture.org).

8. U.S. Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

9. MacKay AP, Fingerhut LA, Duran CR. Adolescent Health Chartbook. Health United States,

2000. Hyattsville, MD: National Center for Health Statistics, 2000.

10. Federal Interagency Forum on Child and Family Statistics. America's Children: Key national indicators of well-being, 2001. Washington, DC: U.S. Government Print Office, 2002.

11. Bearman PS, Jones J, Udry JR. The National Longitudinal Study of Adolescent Health: Research Design. (Available at http://www.cpc.unc.edu/projects.)

12. Currie C. Health Behaviour in School-Aged Children. Research protocol for the 1997-98 survey. A World Health Organization Cross-National Study. Edinburgh: University of Edinburgh, 1998. (Available on the HBSC Website at http://www.ruhbc.ed.ac.uk/hbsc.)

13. DataSpeak videocast of International Perspectives on Youth Violence. (Available at http://www.uic.edu/sph/dataspeak/.)

ACKNOWLEDGEMENTS

This chartbook is the product of the efforts of many authors and editors, including Mary Overpeck, Dr.P.H., Trina Menden Anglin, M.D.,Ph.D., Michael Kogan, Ph.D., Sharon Adamo, M.S., M.B.A., R.D., Michelle Lawler, M.S., R.D., Laura McNally, M.P.H., R.D., F.A.D.A., Denise Sofka, R.D., M.P.H., Audrey Yowell, Ph.D., and Stella Yu, Sc.D. of the Health Resources and Services Administration, Maternal and Child Health Bureau; Christine Bachrach, Ph.D., Peter Scheidt, M.D., M.P.H. and Bruce Simons-Morton, Ed.D., M.P.H. of the National Institute for Child Health and Human Development; Claire Brindis, Dr.P.H. of the National Adolescent Health Information Center; Renee Schwalberg, Jennifer Dunbar, Isha Fleming and Dorothy Borzsak of the Maternal and Child Health Information Resource Center; and Ryan Lalonde of Vanguard Communications (cover design).

CHAPTER ONE

HEALTH AND WELL-BEING

OVERALL HEALTH AND WELL-BEING

Adolescence is characterized by rapid physical growth, significant physical and psychological changes, and changing dynamics in family and peer relationships. The large, rapid changes associated with adolescence may have major effects on the health of individuals, and conversely, variations in health may significantly affect the transitions of adolescence. Optimal health and well-being of adolescents in their daily lives is basic to their successful development into healthy adults in addition to their functional capacity in performing normal daily activities.

The teenage years are traditionally viewed as a time of very good health with low levels of illness and chronic disease, except for the effects of traumatic injuries.[1] Health-related behaviors, such as smoking, may not have immediate health effects for adolescents, although they have implications for chronic diseases later in life and they may affect adolescents' future choices. In contrast, how a student feels on a daily basis, both physically and psychologically, may significantly affect the transitions of adolescence. Thus, measures of factors that influence the success and difficulties of this transition should include indicators of both physical and psychological health. Perceptions of health, self-confidence and satisfaction with life reflect the level of biological and psychosocial stress and anxiety that young people experience.

The ages included in the HBSC study (11, 13, and 15 years) incorporate the significant changes associated with puberty, with expected differences by gender.[2,3,4] By age 15, most of the students described in the following charts have entered puberty, with many already attaining established characteristics that will predict their health as adults. The following charts compare the overall health and well-being of U.S. students to those in other countries at age 15. Reference is made to any differences among counties found in younger age groups and changes between age groups associated with developmental status that have been published in the larger international report.[2] International comparisons of variations in health measures during transitions through adolescence offer rich opportunities to confirm the biological and developmental characteristics that adolescents around the world have in common, while examining the effects of cultural influences in each country.

Adolescents have a greater awareness of their physical status and well-being than do younger children. One way to measure adolescents' health and well-being is their own self-report on health status. The concept of measuring both adolescent and adult health using standardized self-report is well established.[5,6,7,8] In the U.S. adolescents have reported on their own health status in school-based surveys such as the YRBS[9] and AddHealth studies.[10]

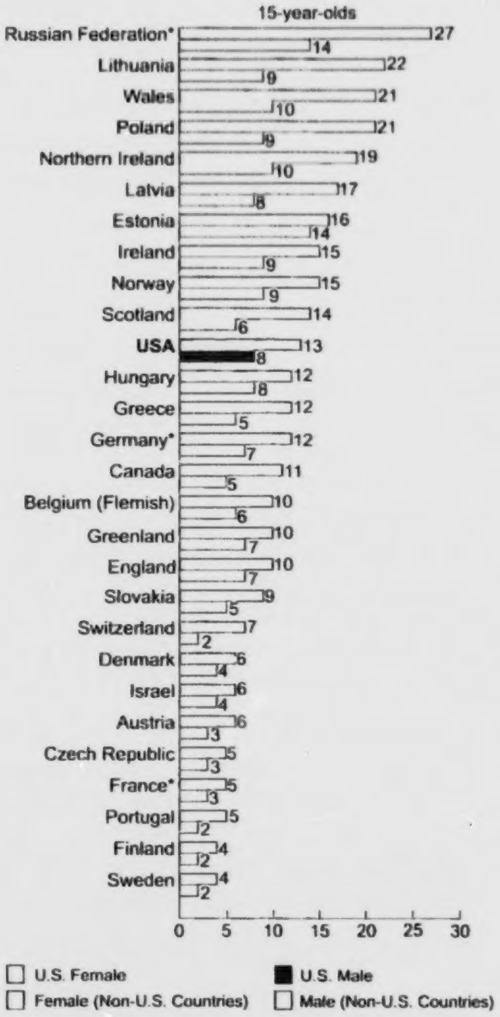
Adolescents in the HBSC were asked to describe their general health status and quality of life in a manner comparable to questions in the YRBS and AddHealth. Questions also asked about specific biological and psychological symptoms, including headache, stomachache, backache, and tiredness. Though not always reflective of serious illness, these symptoms may directly measure functional status or indicate the adolescent's sense of physical well-being. In addition, assessments of how students feel about life in general and whether they feel low or lonely are included because of their effect on general health and because they may reflect levels of mental health or psychosocial well-being. Medication use for specific symptoms may indicate the severity of physical symptoms or the availability and inclination to use medication. Measuring medication use improves our understanding of adolescents' use of health care and their response to their symptoms.

Some symptoms describe depressive feelings, such as feeling low. Students were not given an example of 'feeling low' although it has consistently measured negative affects in earlier international studies from the HBSC.[2] Together with the U.S. AddHealth study,[11] the HBSC provides insight into the day-to-day mental health of students, including assessment of negative feelings. Related questions are asked in the YRBS, which found that 28 percent of U.S. high school students felt so sad or hopeless every day for at least two weeks in the previous year that they stopped doing some usual activities.[9] The HBSC adds to surveillance information by broadly assessing adolescent health and well-being in a broader context beyond the traditional indicators of physical health and disabilities.[12]

FEELING HEALTHY

Boys tend to report somewhat better health than girls in all countries, with 8 percent of U.S. boys reporting not feeling healthy compared to 13 percent of the girls. U.S. students rank among the highest countries in reports of not feeling healthy, ranking seventh highest for boys and 10th for girls. Other countries with such high levels are primarily Eastern European and the Russian Federation. Finland, Sweden, Switzerland and Austria report the lowest levels of students who do not feel healthy. The proportion of students who do not feel healthy tends to increase slightly between ages 11 and 15 for both genders in almost all countries, including in the U.S.[2]

How Healthy Do You Think You Are?
Percent not feeling healthy

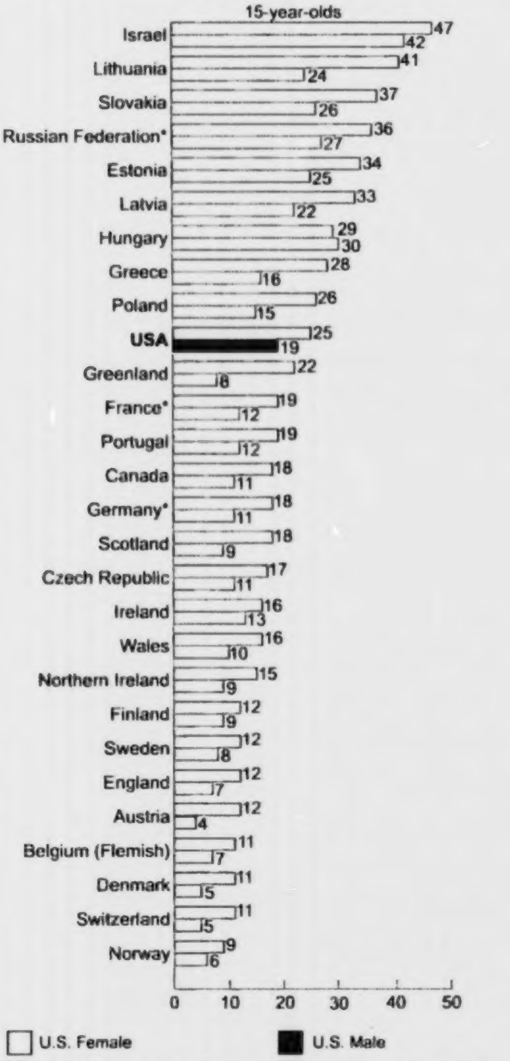


**France, Germany and Russia are represented only by regions*

QUALITY OF LIFE

U.S. students rank among the highest for those who are not feeling happy (seventh for boys and 11th for girls), along with students from Israel, Eastern Europe, and the Russian Federation. Girls are slightly less happy than boys (25 percent and 19 percent respectively), consistent with gender differences among all countries. Boys and girls report slight increases in the proportion who feel unhappy as they age from 11 to 15 years in the U.S. and in many other countries (data not shown).[2] However, the age trend is not consistent for boys in every country - but is consistent for girls.

How Do You Feel About Your Life At Present?
Percent not feeling happy

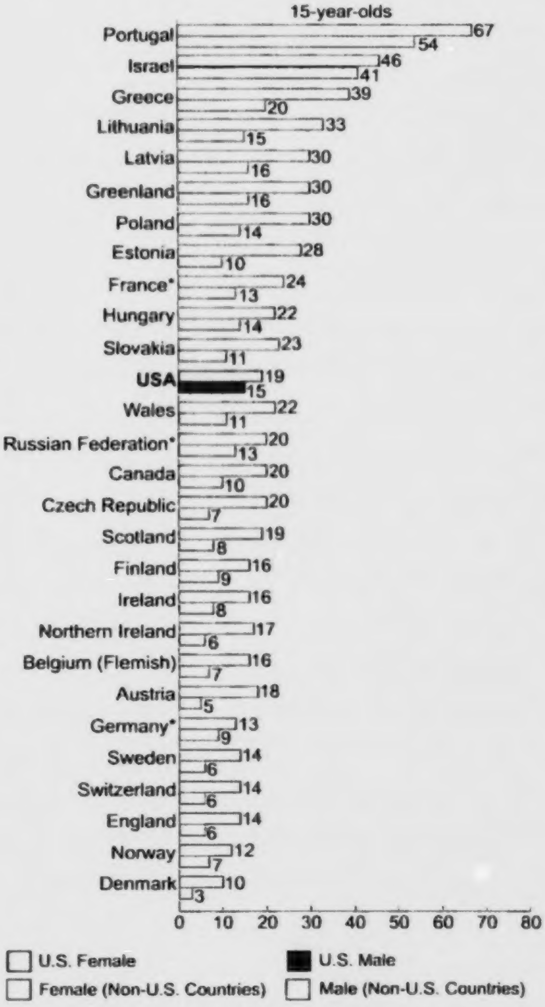


**France, Germany and Russia are represented only by regions*

In all countries, girls are more likely than boys to often feel lonely. In almost half of the countries, fewer than 10 percent of boys often feel lonely compared to 15 percent in the U.S. About one of five U.S. girls often feels lonely, significantly more than girls in Denmark, Norway, England, Switzerland, Sweden, and Germany, but in comparable proportions to most other countries.

In three countries, Portugal, Israel, and Greece, 40 percent or more of girls often feel lonely. No significant differences occur across the three age groups in the U.S. (data not shown).[2]

Do You Ever Feel Lonely?
Percent feeling lonely often or very often



**France, Germany and Russia are represented only by regions*

Differences by age for girls are not consistent across other countries. Large increases between ages 11 and 15 in the proportion of girls who report feeling lonely occur in Portugal, Greece, Latvia, and Greenland, for example.[2]

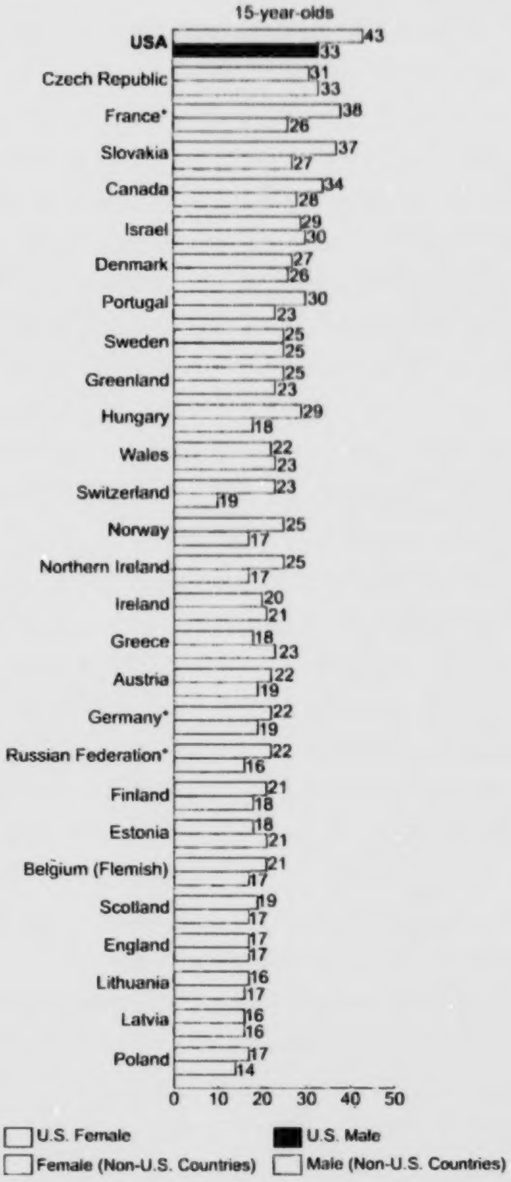
SYMPTOMS

U.S. students, both boys and girls, rank first or second among all countries in reporting of backache, stomachache, and headache at least weekly, significantly higher than the vast majority of other countries. In all countries, girls report more biological symptoms than boys. More than 40 percent of U.S. females report backaches or stomachaches at least weekly; 57 percent report headaches. Among U.S. boys, about one-third reported headaches or backaches occurring at least weekly; 28 percent reported stomachaches. U.S. ranking does not differ for ages 11 and 13 years.[1] Headache and backache are somewhat less common in the youngest years in other countries according to data shown in the international report.[2]

International contrasts show stomachache is reported by <25 percent of girls in 19 other countries; 10 percent in the lowest ranked country. Less than 20 percent of boys elsewhere report stomachache in all but three countries. Similarly low proportions are shown for backache in 20 other countries. Headache is reported by about one-third of girls in six countries with lowest proportions, <20 percent of boys. Less than half of girls report these frequent headaches in the majority of countries. As with headaches, at least 10 percent more girls than boys report weekly stomachaches in all countries.

In The Past Six Months, How Often Have You Had A Backache?

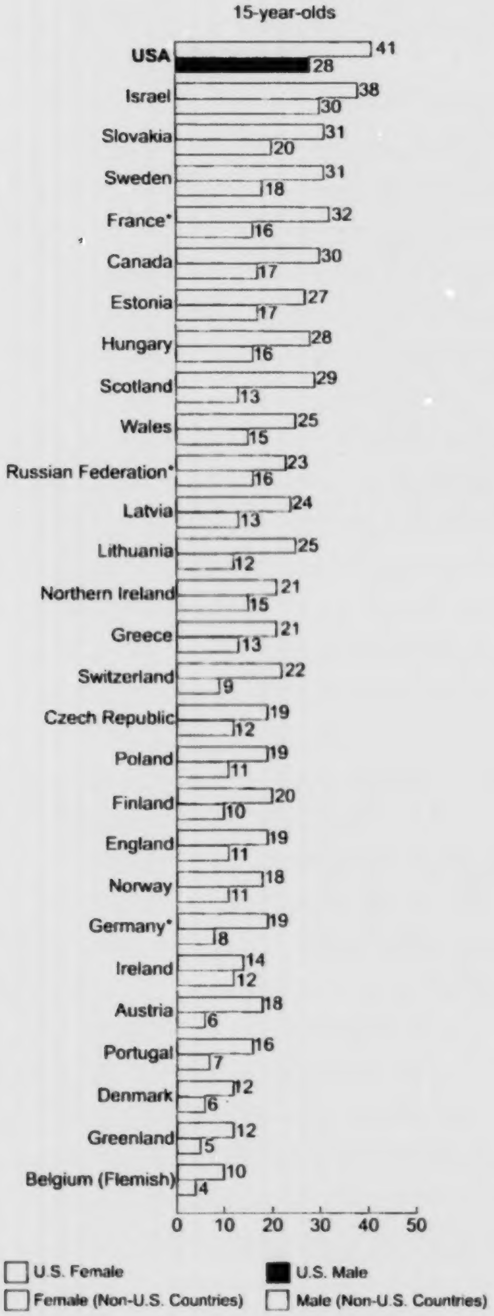
Percent with a backache at least once a week



**France, Germany and Russia are represented only by regions*

In The Past Six Months, How Often Have You Had A Stomachache?

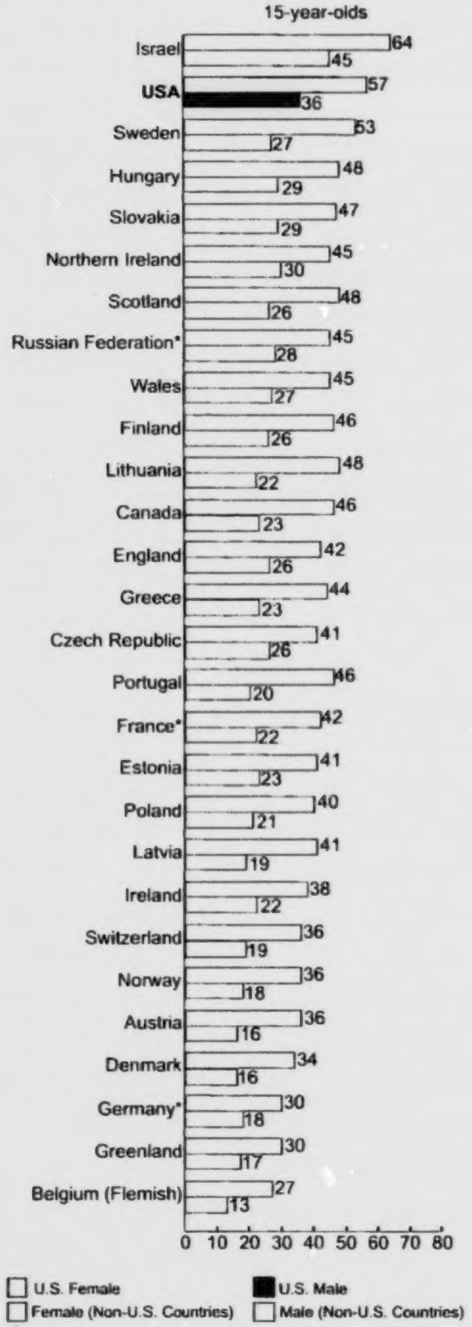
Percent with a stomachache at least once a week



France, Germany and Russia are represented only by regions

In The Past Six Months, How Often Have You Had A Headache?

Percent with a headache at least once a week

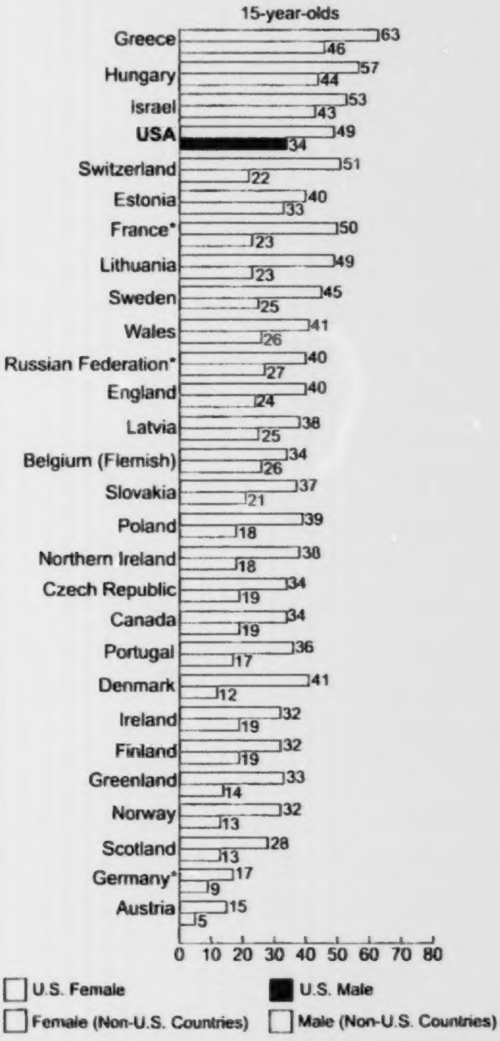


France, Germany and Russia are represented only by regions

The U.S. ranks among the top four for both boys and girls in feeling low, behind Greece, Israel, and Hungary, and ranked first for students at age 11.[2] Feeling low is higher for girls than boys for all ages, and increases with age in the U.S. About half of 15-year-old U.S. girls (49%) feel low at least once a week and almost one-third of boys (34 percent). This is consistent for girls in all countries, but not for boys.[2]

In The Past Six Months, How Often Have You Felt Low?

Percent feeling low once a week or more

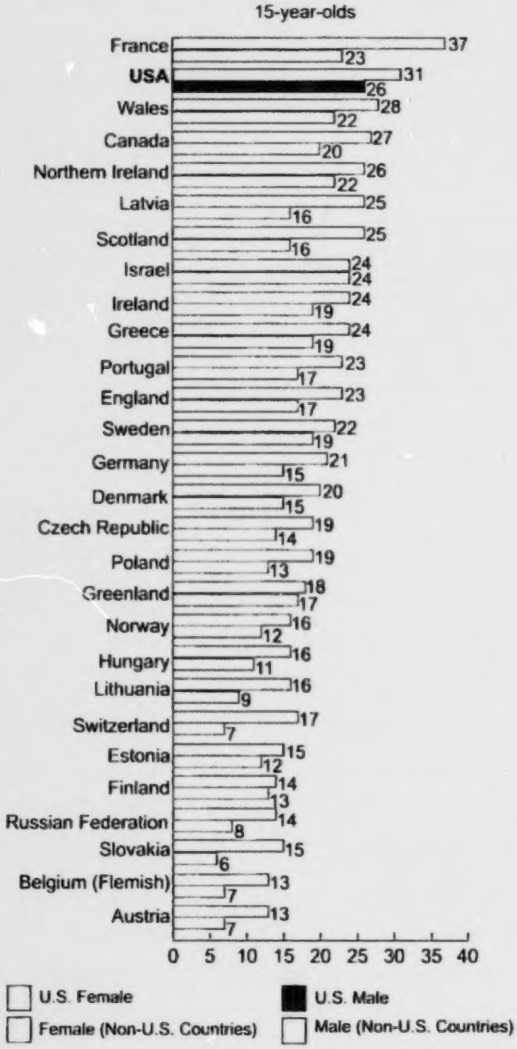


**France, Germany and Russia are represented only by regions*

U.S. boys rank first in reporting of difficulty sleeping at least once a week (41 percent); 46 percent of U.S. girls reported weekly difficulty, ranking second after France. Both U.S. boys and girls had rates similar to Canada, Wales, and Israel.

In The Past Six Months, How Often Have You Had Sleep Difficulties?

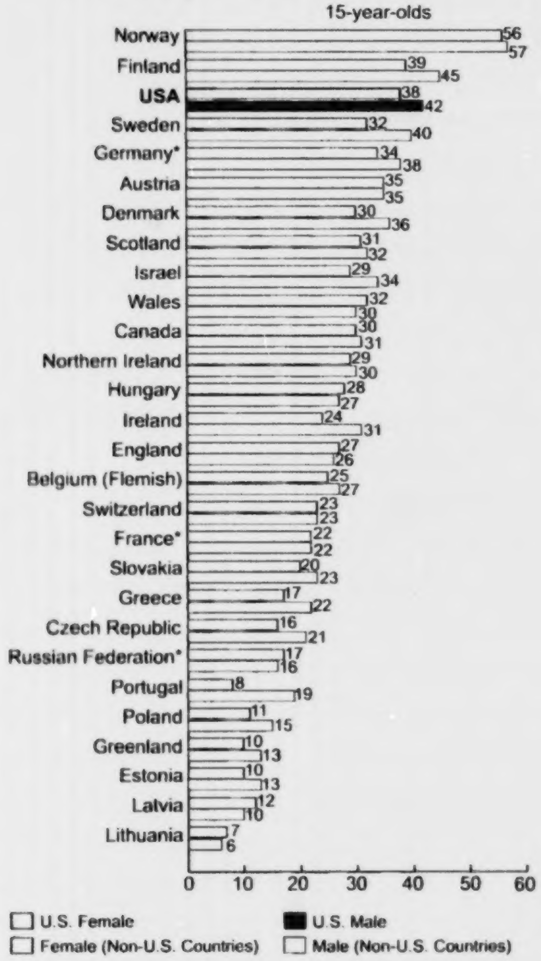
Percent with sleep difficulties at least once a week



U.S. students rank third among countries for feeling tired in the morning four or more times a week, led only by Norway and Finland. (Rankings among countries are generally consistent at ages 11 and 13 years also.)[2] About 40 percent of U.S. students report feeling tired compared to <15 percent in the lowest ranked countries. In contrast to other symptoms, boys feel morning tiredness slightly more often than girls in all three age groups in most countries.[2]

How Often Do You Feel Tired When You Go To School In The Morning?

Percent feeling tired 4 times a week or more



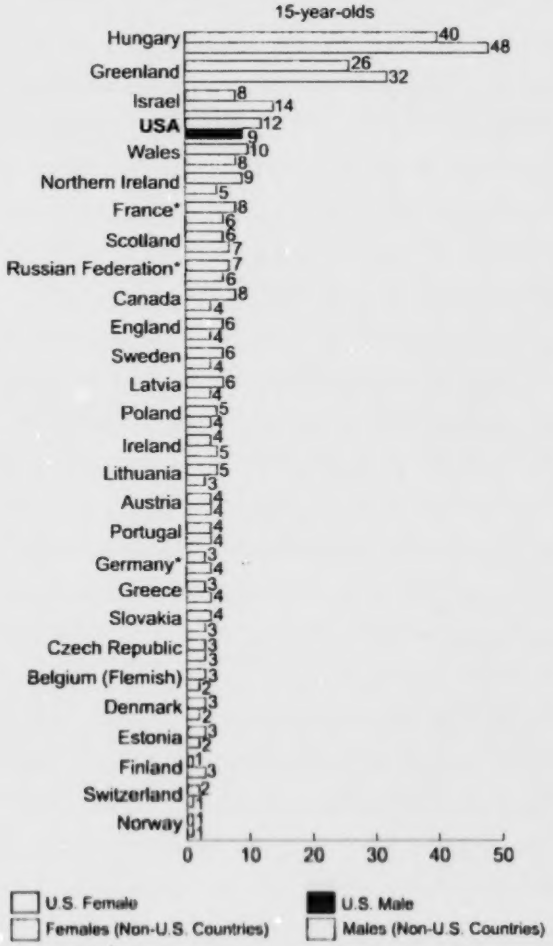
France, Germany and Russia are represented only by regions

MEDICATION USE

Medication use tends to reinforce the pattern of reported symptoms for headache, stomachache and difficulty sleeping. U.S. students rank first in taking medication for headache (and first or second at ages 11 and 13 years).[2] They rank eighth in taking medication for stomachache (fourth at age 11 years; and 7th at 13 years).[2] U.S. boys ranked fourth and girls ranked third in taking medication for sleep difficulties with

During The Past Month, Have You Taken Medication For Sleep Difficulties?

Percent taking medication once or more



France, Germany and Russia are represented only by regions

similar rankings at younger ages. However, U.S. students are no more likely to take medications for nervousness than students in the majority of other countries nor were they more likely to report being nervous (data not shown).[2]

What didn't we know?

Students in the U.S. rank highest or among the top four countries in prevalence of stomachache, backache, headache, difficulty sleeping, feeling tired, and feeling low. Report of medication use for headache, stomachache, and difficulty sleeping is equally high, supporting high estimates of student reports for these symptoms. U.S. students are no more likely to feel lonely, but they are more likely to report feeling low at least once a week. Girls report higher levels of all these symptoms than boys, except for feeling tired.

The relatively high prevalence of headache, stomachache, and backache symptoms in the U.S. are consistent with the comparatively low ranking in the U.S. for feeling healthy. The concurrent high reports of medication use for these symptoms raises a number of questions about both the reasons for higher reporting of the symptoms and whether U.S. youth are more likely to medicate for such symptoms. Gender differences in the U.S. are consistent with HBSC reports from earlier surveys.[13] Compared to boys, adolescent girls across the countries are more likely to report feeling less healthy or happy, to feel more lonely or low, and to have more biological symptoms.

Household health surveys in the U.S. show that parents and guardians report their children's general health status to be good, very good or excellent for 98 percent of both boys and girls at ages 12-17 years; 81-82 percent are reported by their parents to be in "very good" or "excellent" health.[14] How parental reports compare to adolescent self-reports is unknown but would be a useful study, particularly taking family relationships and communication levels into consideration. Parental perceptions and adolescent perceptions with additional self-knowledge may differ through the transitions to independence.

In the HBSC, feeling low is considered to be a negative or depressive symptom. Since students were not given an example of what 'feeling low' meant, it is possible that reports of 'feeling low' may be measuring either biological and/or psychological feelings. However, findings for U.S. students about feeling low at least once a week are consistent with relatively high reports of feeling sad among high school students in the 2001 YRBS.[9] The YRBS also found that girls are more likely to report feeling sad than boys. A report from the U.S. Surgeon General finds that approximately 20 percent of children and adolescents experience a diagnosable mental disorder annually.[15] An AddHealth study that followed students for one year found changes in depressive symptoms during that year, with female gender the only sociodemographic variable consistently associated with higher prevalence of depressive symptoms at baseline and one year later. Factors significantly associated with persistent moderate/severe depressive symptoms were school suspension, fair/poor general health, somatic symptoms, suicidal ideation, receiving psychological counseling, and difficulty in obtaining needed medical care.[16]

U.S. research on feeling tired shows that adolescents are biologically challenged by early school start times and shortened sleep schedules, resulting in impaired daytime functioning.[17] Data showing high U.S. ranking for difficulties sleeping, including medication treatment, indicate that other factors may be affecting tiredness as well. Reports of relatively low quality of life (such as not feeling happy and feeling lonely) also raise questions about the relationship between these problems with physical health symptoms. Feelings of health and well-being may be correlated with factors described in the following chapters on fitness, family and peer relations, and school.

REFERENCES

1. MacKay AP, Fingerhut LA, Duran CR. Adolescent Health Chartbook. Health United States, 2000. Hyattsville, MD: National Center for Health Statistics, 2000.

2. Currie C, Hurrelman K, Settertobulte W, Smith R, Todd J. Health and Health Behaviour Among Young People. WHO Policy Series: Health Policy for Children and Adolescents Issue 1.

3. Behrman RE. Kliegman RM, Jenson JB. Nelson Textbook of Pediatrics. 16th ed. Philadelphia PA: W.B. Saunders Co., 2000;pages 52-57.

4. Friedman SB, Fisher M, Schonberg SK, Alderman EM. Comprehensive Adolescent Health Care. St. Louis, MO: Mosby Press, 1998;pages 23-33.

5. Starfield B, Riley AW, Green BF, Ensminger ME, Ryan SA, Kelleher K, Kim-Harris S, Johnston D, Vogel K. The adolescent child health and illness profile. A population-based measure of health. Medical Care 1995;33(5):553-66.

6. Riley AW, Forrest CB, Starfield B, Green B, Kang M, Ensiminger M. Reliability and validity of the adolescent health profile-types. Medical Care 1998;36(8):1237-48.

7. U.S. Department of Health and Human Services. Major Data Sources for Healthy People 2010. In: Tracking Healthy People 2010. Washington, DC: U.S. Government Printing Office, 2000;pages C1-C48.

8. Raphael D, Rukholm E, Brown I, Hill-Bailey P, Donato E. The Quality of Life Profile— Adolescent Version: Background, description, and initial validation. Journal of Adolescent Health 1996;19(5):366-75.

9. Grunbaum JA, Kann L, Kinchen SA, et al. Youth Risk Behavior Surveillance - United States, 2001. MMWR 2002;51(SS4):1-28.

10. National Longitudinal Study of Adolescent Health: In school questionnaire. Chapel Hill, North Carolina: Carolina Population Center, University of North Carolina at Chapel Hill, September 1998.

11. Rushton JL, Forcier M, Schectman RM. Epidemiology of depressive symptoms in the National Longitudinal Study of Adolescent Health. J Am Academy of Child and Adolescent Psychiatry 2002;41:199-205.

12. Federal Interagency Forum on Child and Family Statistics. America's Children: Key national indicators of well-being, Federal Interagency Forum on Child and Family Statistics. Washington, D.C.: U.S. Government Printing Office, 1998.

13. Kolip P, Schmidt B. Gender and health in adolescence. WHO Policy Series "Health policy for children and adolescents", Issue 2. Copenhagen, Denmark: WHO Regional Office for Europe, 1999;pages 14-19.

14. Bloom B, Tonthat L. Summary Health Statistics for U.S. Children: National Health Interview Survey, 1997. Data from the National Health Interview Survey. Centers for Disease Control and Prevention, National Center for Health Statistics, Vital and Health Statistics,

Series 10, No. 203. Hyattsville, MD: DHHS Pub. No. (PHS) 2002-1531, 2002.

15. U.S. Department of Health and Human Services. Mental Health: A Report of the Surgeon General-Executive Summary. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999.

16. Rushton JL, Forcier M, Schectman RM. Epidemiology of depressive symptoms in the National Longitudinal Study of Adolescent Health. J Am Academy of Child and Adolescent Psychiatry 2002; 41:199-205.

17. Wolfson AR, Carskadonm MA. Sleep schedules and daytime functioning in adolescents. Child Development 1998; 69:875-887.

CHAPTER TWO

FITNESS

FITNESS

Fitness underlies much of the overall health and well-being described in the previous chapter, affecting both current and future physical and psychological health. Physical activity, nutrition, and lifestyle all contribute to adolescents' daily functioning.

Adolescence is a critical period for the onset of obesity and for obesity-associated illnesses in later life.[1,2] During adolescence, overweight youth may face discrimination, rejection, and low self-esteem, affecting their social relationships, school experiences, psychological well-being, and future aspirations.[3,4] The U.S. Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity addresses the epidemic of overweight and obesity among U.S. youth.[5] A number of factors contribute to this epidemic, including increases in the number of calories consumed, low levels of physical activity, and high levels of sedentary behavior.

Promoting healthful physical activity is an important way to combat this epidemic while establishing habits that can be sustained into adulthood. Scientific research over the last 50 years, primarily in adults, has shown that moderate physical activity is associated with a number of physical and mental health benefits, while a lack of physical activity has negative consequences. In addition to reducing the risk for being overweight or obese, regular, moderate physical activity also reduces the risk of coronary heart disease, cerebrovascular disease, hypertension, type II diabetes, osteoporosis, and deterioration of functional capacity.[6] Among mental health benefits, exercise reduces the risk of anxiety and can improve self-esteem.[7,8] In addition to its preventive benefits, physical activity is also recommended as a treatment for clinical depression and type II diabetes.[6,7,9] In adults, low levels of physical activity are associated with high risk of diabetes as well as high rates of cardiovascular deaths and deaths from all causes.[9]

Like adults, adolescents achieve considerable advantages from regular physical activity. As noted in *Physical Activity and Health: A Report of the Surgeon General*,[10] increased physical activity levels in children and adolescents can reduce their coronary heart disease risk factors, such as lowered blood pressure, reducing obesity and helping control type I diabetes. Moreover, physical activity provides physical benefits during childhood and adolescence, such as increased bone mass, and has positive effects on psychological well-being.[10,11] Sedentary adolescents have higher resting blood pressure than physically active students, while physically active adolescents have a more favorable blood lipid profile, in terms of their cholesterol and triglycerides, than their sedentary peers.[13] The Surgeon General's Call to Action[5] stresses the need to reduce sedentary behaviors, such as watching TV, which are also associated with increased consumption of snack foods and soft drinks among adolescents.[14] Besides these dietary associations, time spent watching TV detracts from time available for active behaviors. The American Academy of Pediatrics recommends limitation of television viewing to one to two hours per day.[15]

Adolescents' eating habits not only affect their risks for overweight but also may hamper their ability to grow normally and to conduct their daily activities.[16] An increase in the velocity of growth (a growth spurt) associated with hormonal, cognitive, and emotional changes of adolescents, and proper nutrition is necessary for this growth. Adolescents' intake of saturated fat, total fat, sodium, and soft drinks, with their relatively low intake of fruits, vegetables, fiber, and calcium-containing foods, may be increasing their future risk of cardiovascular disease, cancer, and osteoporosis.[17] Among adolescents, low levels of fiber and high levels of saturated fat, total fat, and sodium may be related to low intake of fruits and vegetables.[18] Of all the food groups, fruit and vegetable groups are the ones that adolescents are least likely to eat in sufficient quantities.[19]

Even temporary eating habits during adolescence can have a long-term impact on future risk for osteoporosis, since skeletal maturity is achieved during the late stage of pubertal development.[20] Bone growth during adolescence accounts for about 45 percent of total attained peak bone mass.[21] A decline in milk consumption during adolescence appears to be related to the increase in soft drink consumption by youth, with teens drinking twice as much soft drinks as milk, a reversal of patterns found during the early 1980s.[22,23] Replacement of milk with soft drinks may affect bone health through several mechanisms, including reductions in calcium, bone resorption (breakdown) from phosphoric acid in soft drinks, and possible increased calcium excretion from caffeinated drinks.[24,25]

Other nutritional issues include the relationship of dietary intake and eating patterns on academic achievement; in particular, breakfast consumption and iron intake. Iron deficiency anemia is a nutritional concern for adolescent girls, which can result in fatigue, reduced attention span, and impaired intellectual performance.[26]

Dietary behavior is also a factor in other weight-related disorders such as anorexia nervosa, bulimia nervosa, anorexia/bulimic behaviors, adverse dieting behaviors and binge eating disorders. These disorders tend to peak in prevalence and severity during adolescence: 10 to 20 percent of girls show anorexic and/or bulimic behaviors, and the more severe forms of these disorders are classified as mental illnesses. Girls are more likely than boys to report dieting behaviors, often because of concern with self-image. While some diets may be healthful, some, such as fasting, are very unhealthy. The Surgeon General's Call to Action stresses the importance of addressing weight and physical activity from the perspective of good health rather than from concern with body image.

This chapter shows how U.S. students compare to students from other countries on measures related to fitness, including frequency and intensity of physical activity, amount of television viewing, and dietary habits. The comparisons of physical activity across countries should be interpreted cautiously, because the questionnaires were not administered at the same time during the school year in every country and seasonal differences in opportunities for outdoor activity vary greatly from one country to another.

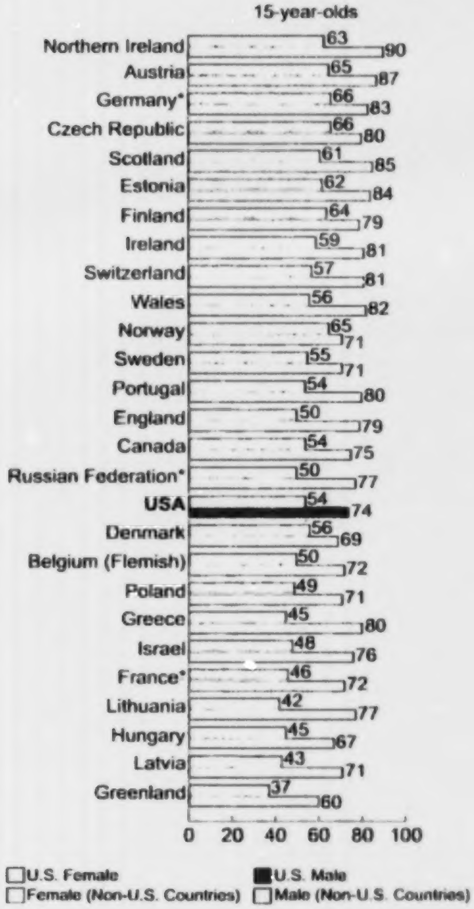
PHYSICAL ACTIVITY

While most U.S. students exercise on two or more occasions per week, comparatively they rank in the lower half of countries for exercise frequency. And, as is the case with all other countries measured, regular exercise is more common among boys than girls, with 74 percent of boys and 54 percent of girls exercising twice a week or more. For boys, exercise frequency of two times or more per week ranges from 90 percent in Northern Ireland to 60 percent in Greenland. For girls, the most frequent exercisers are in Germany and the Czech Republic (66 percent) and the least frequent are in Greenland (37 percent). For exercise frequency, perhaps the most disturbing trend is the decline among girls as they age. While 65 percent of U.S. 11-year-olds report exercising two times or more per week, that figure declines to 62 percent for 13-year-old girls, and 54 percent for the 15-year-olds, as noted above. Unfortunately, this same downward trend exists among girls in all the countries measured, while there is not a decline among boys.

U.S. students rank in the middle for exercise length, with more than half reporting that they exercise for two hours or more a week. As with exercise frequency, U.S. boys are more likely than girls to exercise two hours or more a week: 67 percent compared to 51 percent. There is also wide variability among countries for exercise length. Eighty-six percent of Austrian boys exercise at least two hours a week compared to 48 percent of boys in Portugal. Among girls, 70 percent of students in Germany report exercising two hours or more per week compared to 25 percent in Portugal.

How Often Do You Usually Exercise In Your Free Time So Much That You Get Out Of Breath Or Sweat?

Percent exercising twice a week or more



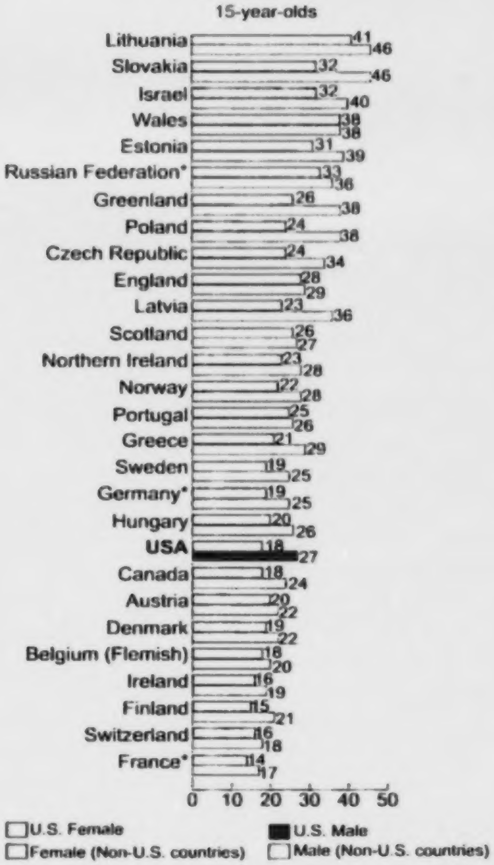
**France, Germany and Russia are represented only by regions*

LEISURE-TIME ACTIVITIES (TELEVISION WATCHING)

Interestingly, the percent of frequent television watchers among U.S. students declines steeply from age 11 to age 15. U.S. students at age 11 are in the top third of countries for frequent television watching, with 34 percent of girls and 36 percent of boys reporting that they watch four or more hours of television per day. At age 13, U.S. students are in the middle range of countries, with 28 percent of girls and 33 percent of boys reporting heavy television viewing. By age 15, as the chart indicates, the U.S. students ranked in the lowest third of countries, with 18 percent of

How Many Hours A Day Do You Usually Watch TV?

Percent watching for 4 hours or more



**France, Germany and Russia are represented only by regions*

BEST COPY AVAILABLE

girls and 27 percent of boys watching television for four hours or more per day. Among boys, frequent television watching ranges from 46 percent (Lithuania and Slovakia) to 17 percent (France). Similar patterns hold true for girls.

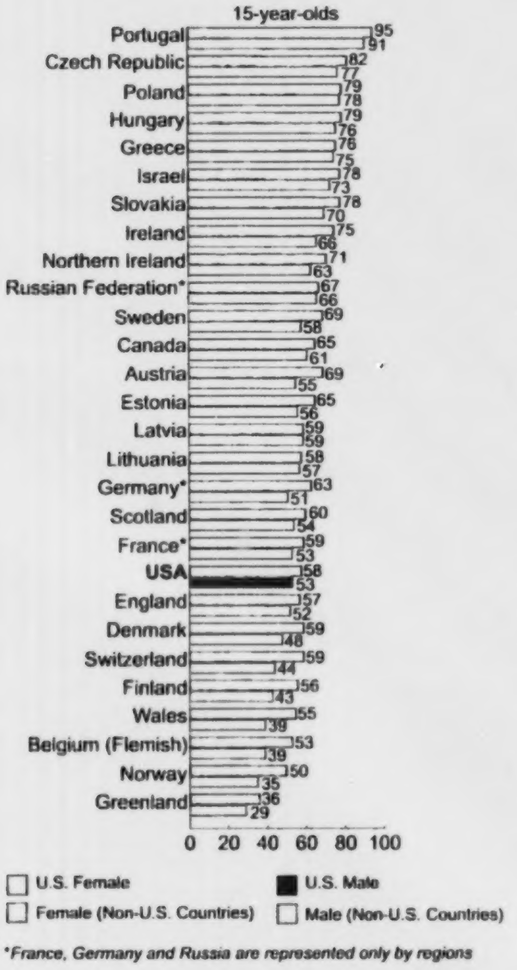
NUTRITION

The U.S. ranked among the lowest third of countries, with 58 percent of girls and 53 percent of boys reporting daily fruit consumption. Proportions eating fruit in other countries ranged from about one third of students in Greenland to over 90 percent in Portugal. Across countries more girls than boys ate fruit, with the proportion decreasing with age. U.S. students followed this gender and age pattern.

Students in the U.S. were among the top five countries in the proportion eating fried potatoes daily: 21 percent of U.S. girls and 31 percent of boys. Across countries, more boys than girls ate french fries or fried potatoes every day, with the proportion decreasing with age. Levels were highest in Northern Ireland, Scotland, Israel, England, and the U.S. About 5 percent or fewer

How Often Do You Eat Fruit?

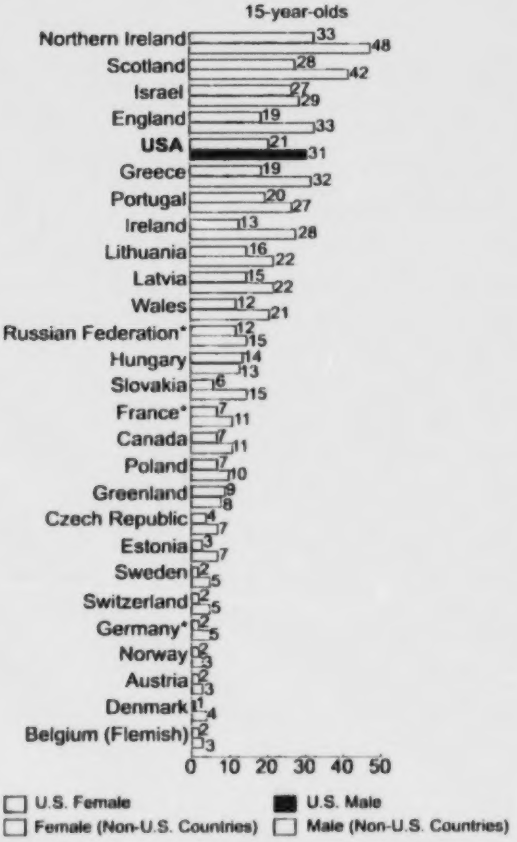
Percent eating fruit daily



**France, Germany and Russia are represented only by regions*

How Often Do You Eat French Fries Or Fried Potatoes?

Percent eating french fries or fried potatoes daily



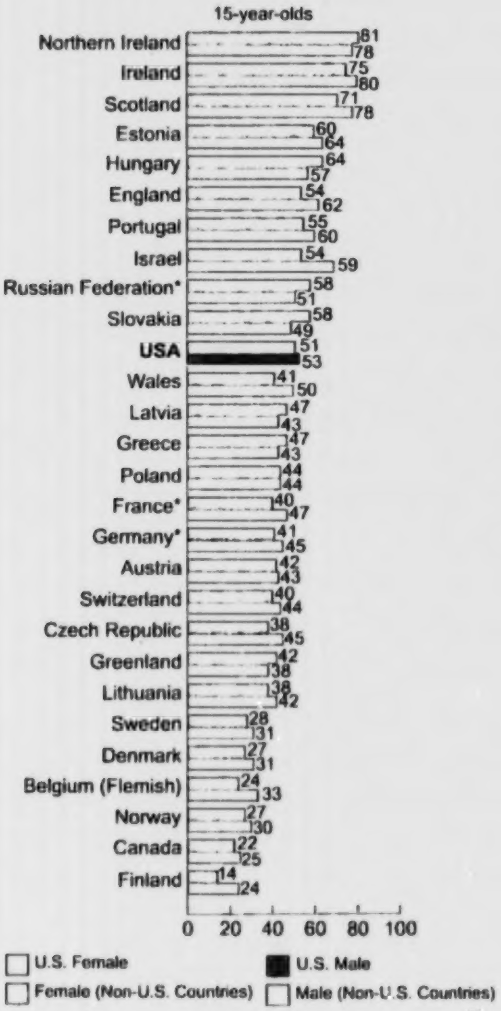
**France, Germany and Russia are represented only by regions*

students ate fried potatoes in the nine countries with the lowest proportions.

U.S. students ranked about in the middle of all countries (11th out of 28 countries) with 51 percent of girls and 53 percent of boys eating sweets or chocolate daily. Across countries, candy consumption decreased with age and gender differences were minimal.

How Often Do You Eat Candy Or Chocolate?

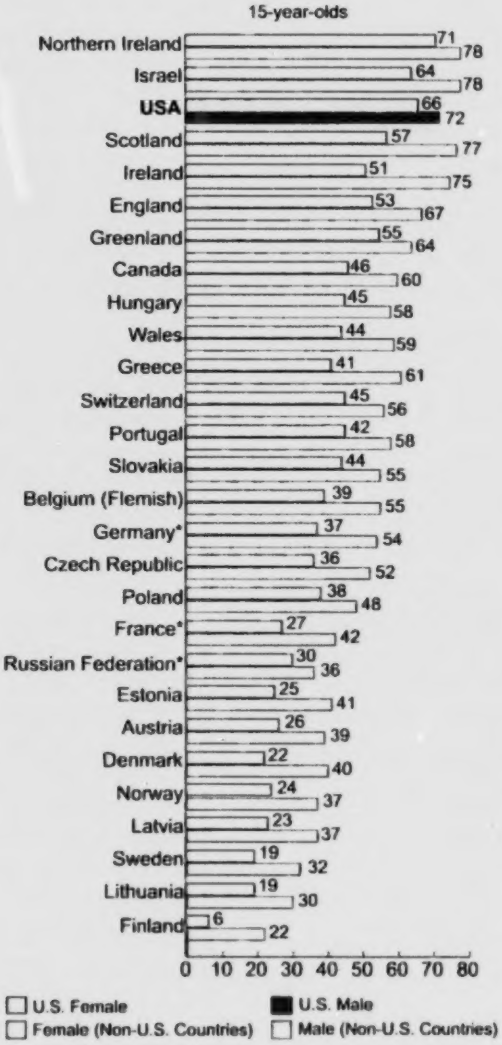
Percent eating candy or chocolate daily



France, Germany and Russia are represented only by regions

How Often Do You Drink Soft Drinks?

Percent drinking soft drinks daily



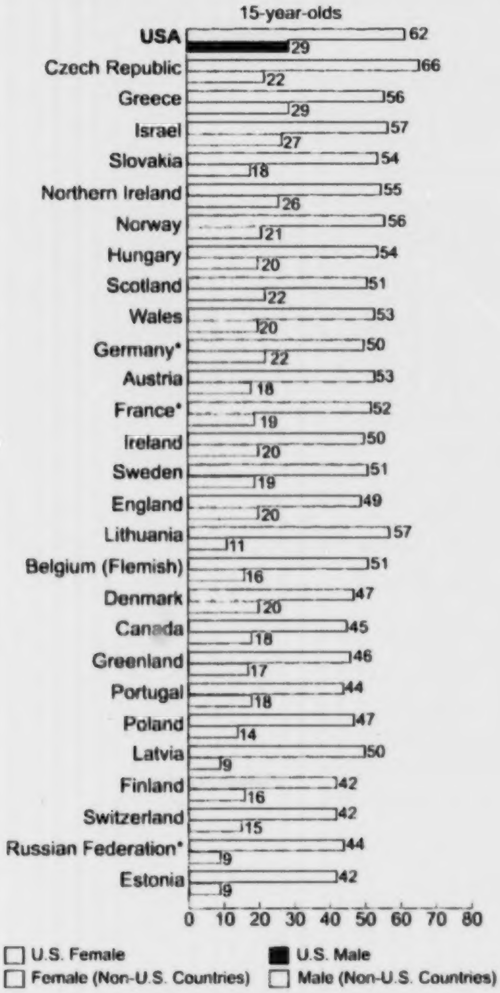
France, Germany and Russia are represented only by regions

U.S. students rank third for daily consumption of soft drinks with sugar, following only Northern Ireland and Israel, with 66 percent of girls and 72 percent of boys. Across countries, more boys than girls drank soft drinks every day and boys showed a greater increase in this percentage with age. Most other countries have a wider gender gap than in the U.S. In nearly two-thirds of countries, half of all 15-year-old boys drank soft drinks every day, compared to one-quarter of girls.

U.S. students were most likely to be on a diet or to feel that they should be across countries. Girls far outpaced boys, 62 percent to 29 percent. Gender differences were strong in all countries. In nearly all countries, younger students were satisfied with their weight, but by age 15, nearly half of the girls in 16 countries were dieting or felt that they should be on a diet.

Are You On A Diet To Lose Weight?

Percent dieting to lose weight or feeling that they should diet to lose weight



**France, Germany and Russia are represented only by regions*

What didn't we know?

Most U.S. students exercise twice a week or more but still rank among the lowest among all countries for frequency. Of those who exercise, U.S. students rank in about the middle for time spent exercising. In all countries, boys exercise more than girls and the proportion of girls who exercise decreases between ages 11 and 15. The HBSC doesn't include all possible activities involving exercise that students may participate in due to the complexity of establishing comparability among country-specific activities and changes in participation rates over the recall time of the survey.

Time spent watching TV decreases with age for U.S. students, a pattern that is not consistent across all countries. The HBSC asked about time spent playing computer games, but not time spent on other computer activities such as using the Internet for other activities and chatting with friends. The proportion of U.S. students who play computer games and time spent playing also tended to decrease with age, again not a consistent pattern across all countries (data not shown).[27] We don't know if time spent using the Internet compensates for the decreasing time spent with TV as U.S. students age.

An analysis across all countries in the HBSC shows that the hours spent watching television or playing computer games are correlated with increased consumption of soft drinks, sweets, and potato chips. The correlation is particularly strong between TV hours and soft drinks and sweets for 11- and 13-year-old boys and 11-year-old girls in all countries.[27] U.S. research documents increases in portion sizes and use of soft drinks; with students drinking twice as much soft drinks as milk, a reversal of patterns of 20 years ago.[19,22] We didn't know that U.S. students are more likely to consume soft drinks and french fries than students in almost all other countries, but the relation between the diet of U.S. students, their physical activity, and obesity is firmly established.[5] The HBSC study didn't ask how often U.S. students eat out in comparison to other countries, nor does the HBSC have information on serving sizes. Serving sizes in restaurants and fast-food or carry-out locations have increased in the U.S., contributing to the epidemic of obesity.[23,28]

The international comparisons of factors related to fitness in this report are suggestive, raising questions not only about exercise, diet, and obesity, but about the relationship of fitness to U.S. students' overall health and well-being as described in the previous chapter. We have been concerned about increases in obesity among children and adolescents since the 1970's.[5] As noted in the previous chapter, comparatively high proportions of U.S. students report negative feelings about themselves, feeling low and lonely, with relatively high rankings on physical symptoms such as headache, backache, stomachache, difficulty sleeping, and feeling tired in the morning.

The social and psychological concerns described under health and well-being may be correlated with the higher reports of negative feelings associated with poorer fitness profiles. As noted by Faulkner, Gortmaker, and others, weight status is associated with social relationships, school experience, psychological well-being, and future aspirations with possible economic consequences.[3,4] Faulkner notes that obese girls report more adverse social, educational, and psychological correlates; obese and underweight boys noted more adverse social and educational correlates. In the HBSC, U.S. students ranked first in feeling they should be on a diet, with two-thirds of girls feeling this way. This is a higher proportion than are actually overweight in the U.S., reinforcing recommendations by the Surgeon General that weight concerns should focus on health rather than body image.[5] These findings suggest that the social and psychological risks associated with not meeting weight and body shape ideals may be embedded in our larger culture, while the analysis by Gortmaker, et al., documents that overweight during adolescence has important social and economic consequences in adulthood for outcomes such as lower educational levels, income, and marriage rates. Of course, the family, neighborhoods, communities and cultural norms also influence these outcomes among students, along with patterns of diet and physical activity.[5] U.S. students were not among the HBSC students who exercise most frequently or spend higher proportions of time exercising. Time spent with TV and using computers may be correlated with physical activity, obesity, and diet. As noted by Robinson, children who watch more TV are more likely to eat high-fat food and drink soft drinks.[14]

Preliminary data analysis from some HBSC countries indicate that U.S. students ages 11, 13 and 15 are significantly more likely to be at risk of overweight and obesity than students in any of the 15 European countries collecting measures on height and weight. This is of particular concern as we have recognized the emergence of type II diabetes as prevalent in U.S. youth.[5]

The international report of the HBSC reported that over all the countries, students on diets had a higher daily consumption of fruits and vegetables and low-fat milk, and lower consumption of less nutritious foods.[27] Along with the substitution of soft drinks for milk among U.S. students, we are concerned about the effects of soft drink consumption on bone mineral density due to increased odds of bone fractures in both physically active and inactive girls who drink carbonated beverages and the longer term risks for osteoporosis.[21,24]

There are strong implications of U.S. student patterns of physical activity, obesity, and diet for their overall health and well-being as described in the previous chapter. It may be that the high levels of overweight and poor body image are contributing to the relatively higher levels of negative feelings reported. Our physical activity and diet patterns may be contributing to high reports of feeling low, difficulties sleeping and tiredness in the mornings. Carbohydrate loading from both the types of foods and soft drinks may affect efficient daylong functional status and sleep. In addition, the high levels of caffeine in our soft drinks, along with coffee consumption not measured in the HBSC, may also contribute to both the physical and psychological symptoms of headache and feeling low. Physical activity, diet, health and well-being are also integrally affected by our family and peer relationships, as described in the following chapter.

REFERENCES:

1. Dietz WH. Health consequences of obesity in youth: Childhood predictors of adult disease. Pediatrics 1998;101(suppl):518-525.

2. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. N Engl J Med 1997;337:869-873.

3. Gortmaker SL, Must A, Perrin JM, Sobol AM, Dietz WH. Social and economic consequences of overweight in adolescence and young adulthood. N Engl J Med 1993;329:1008-1012.

4. Falkner NH, Neumark-Sztainer D, Story M, Jeffery RW, Beuhring T, Resnick MD. Social, educational, and psychological correlates of weight status in adolescents. Obesity Research 2001;9:32-42.

5. U.S. Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville, MD: U.S. Public Health Service, 2001.

6. Vuori IM. Health benefits of physical activity with special reference to interaction with diet. Public Health Nutr 2001;4(2B):517-528.

7. Fox KR. The influence of physical activity on mental well-being. Public Health Nutr 1999;2(3A):411-418.

8. Creviston T, Quinn L. Exercise and physical activity in the treatment of type 2 diabetes. Nurs Clin North Am 2001;36(2):243-271.

9. Erikssen G. Physical fitness and changes in mortality: The survival of the fittest. Sports Med 2001;31(8):571-576.

10. Centers for Disease Control and Prevention. Physical Activity and Health: A Report of the Surgeon General. Washington, DC: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; President's Council on Physical Fitness and Sports, 1996.

11. Sallis JF, Prochaska JJ, Taylor WC. A review of correlates of physical activity of children and adolescents. Med Sci Sports Exerc 2000;32(5):963-975.

12. Alpert BS, Wilmore JH. Physical activity and blood pressure in adolescents. Pediatr Exerc Sci 1994;6:361-380.

13. Armstrong N, Simons-Morton B. Physical activity and blood lipids in adolescents. Pediatr Exerc Sci 1994;6:381-405.

14. Robinson T. Reducing children's television viewing to prevent obesity. JAMA 1999;282:1561-1567.

15. American Academy of Pediatrics, Committee on Communications. Children, adolescents, and television. Pediatrics 1995;96:786-787.

16. Spear BA. Adolescent growth and development. J Am Diet Assoc 2002;102 (Suppl):S23-29.

17. Lytle LA. Nutritional issues for adolescents. J Am Diet Assoc 2002;102 (Suppl):S8-S12.

18. Munoz KA, Krebs-Smith SM, Ballard-Barbash R, Cleveland LE. Food intakes of U.S. children and adolescents compared with recommendations. Pediatrics 1997;100:323-329.

19. Kennedy E, Goldberg J. What are American children eating? Implications for public policy. Nutr Rev 1995; 53:111-126.

20. Cadogan J, Eastell R, Jones N, Barker ME. Milk intake and bone mineral acquisition in adolescent girls: Randomised, controlled intervention trial. BMJ 1997;315:1255-1260.

21. Sentipal JM, Wardlaw GM, Mahan J, Matkovic V. Influence of calcium intake and growth indexes on vertebral bone mineral density in young females. Am J Clin Nutr 1991;54:425-428.

22. Jacobson MF. Liquid Candy: How soft drinks are harming Americans' health. Washington, DC: Center for Science in the Public Interest, 1997.

23. Wilson JW, Enns CW, Goldman JD, Tippett KS, Mickle SJ, Cleveland Le, Chail PS. Data Tables: Combined Results from USDA's 1994 and 1995 Continuing Survey of Food Intakes by Individuals and 1994 and 1995 Diet and Health Knowledge Survey. Riverdale, MD: US Dept of Agriculture, Food Survey Research Group, Beltsville Human Nutrition Research Center, 1995;pages 61-78.

24. Wyshak G. Teenaged girls, carbonated beverage consumption, and bone fractures. Arch Pediatr Adolesc Med 2000;154:610-613.

25. Neumark-Sztainer D, Moe JK. Weight-related concerns and disorders among adolescents. In: Worthington-Roberts BS, Williams SR, eds. Nutrition throughout the Life Cycle. 4th ed. Boston: McGraw Hill, 2000;pages 288-317.

26. Politt E. Iron deficiency and cognitive function. Annu Rev Nutr 1993;13:521-537.

27. Currie C, et al. (eds.) Health and Health Behaviour among Young People (International Report from the HBSC 1997/98 Survey). WHO Policy Series: Health policy for children and adolescents, 2000;pages 80-81. (Available on the HBSC Website: http://www.hbsc.org)

28. Young LR, Nestle M. The contribution of expanding portion sizes to the US obesity epidemic. Am J Public Health 2002;92:246-249.

CHAPTER THREE

FAMILY AND PEER RELATIONSHIPS

FAMILY AND PEER RELATIONSHIPS

Adolescent health and behavior occur within the social context of family and peer relationships. These relationships and their effects are complex; not only do family relationships influence an adolescent's behavior, but they are influenced by the adolescent's behavior as well. A committee of the U.S. National Academy of Sciences stressed the problems of understanding these influences and their effects on health and behavior due to their complexity and their interaction with the family's genetic contributions to the adolescent's health and behavior.[1] The complex influence of family begins before birth[2] and is carried into the transition to adult independence and pursuit of individual identity. Over the course of development from infancy to adolescence, the family's impact on basic physiologic systems, emotion processing, and social competence has relevance for health.[3] As adolescents begin to spend more time with peers, the relative importance of peer group influence over family influence may change.[4]

Parent-child relationships, family structure, and peer group relationships all affect our ability to modify adolescent health and health behavior. Previous research links family and peer relationships to adolescent health behaviors such as seatbelt use,[5] smoking,[6] sexual behavior,[7] alcohol use,[8] and violence and aggressive behavior.[9] Family support, parenting styles, and the influence of peer pressure have been linked to adolescent health behavior.[10] A thorough review of research on effects of the family social environment found two generally 'risky' family characteristics that have adverse physical and mental effects on children and youth: 1) conflict and aggression, and 2) a cold, unsupportive or neglectful home.[3] In addition to direct effects on health, such as physical abuse, the impact of the home may be mediated or sustained by disruptions in the child's ability to mount a successful physical and/or behavioral response to stress and to acquire appropriate emotional and behavioral self-regulatory skills.[3]

While the influence and educational role of the family may decrease as students move toward independence, the family's role throughout early life in shaping the health behavior of adolescents is critical and well documented.[2] According to findings from the National Longitudinal Study of Adolescent Health (AddHealth),[11] the physical presence of a parent in the home at key times, as well as parental connectedness (e.g. feelings of warmth, love, and caring from parents), and parental expectations are associated with adolescent health behavior. Specifically, high parental expectations were an important predictor of adolescents' not engaging in violence, while the physical presence of a parent in the home reduced the risk of substance use. The study also showed that the home environment shapes negative outcomes. Findings indicate that adolescents with easy access to guns, alcohol, tobacco, and illicit substances have an increased risk of suicide, involvement in interpersonal violence, and substance use.

Changes in family structure over the last three decades, with dramatic increases in divorce rates and parental remarriage, as well as single parenting, have also been shown to affect adolescent health and health behavior.[12] Again, longitudinal studies of family composition and stability across the developmental stages of a child are needed to understand causation and associations shown with health and health behaviors at a single time in an adolescent's life. Instability and family disruption prior to divorce may be more influential than eventual separations and divorce. However, family stability, marital disruption and family composition are associated with cognitive, emotional, and behavioral problems in children.[13] For example, a study by Moore et al.[14] reported that disruption of parents' marriage and living with a single parent are related to early onset of sexual behavior. Similarly, research has also shown that adolescents from one-parent families are more likely to demonstrate increased substance and alcohol use as well as more emotional problems, such as depression and loneliness, compared to those in intact families.[15] An AddHealth study of family structure on adolescent risk behaviors found strong associations between single-parent families and smoking or sexual intercourse in grades 7-12 and with alcohol use at grades 7-8.[16]

Affiliation with friends who engage in risk behaviors has been shown to be a strong predictor of an adolescent's own behavior.[10] For instance, alcohol use by friends is substantially associated with adolescents' own alcohol use.[8] Likewise, friends' cigarette smoking and use of hard drugs is related to an adolescent's own smoking and drug use.[17] The causal relationship between friends' risk behavior and adolescents' own behavior is important to consider in examining adolescent health behavior. Adolescents may choose friends who engage in similar types of behavior, or they may be influenced by the behavior of friends.[19]

Research from the longitudinal AddHealth study addresses the multifaceted nature of friendship networks as they impact on the relationship between peer delinquency and an adolescent's own delinquent involvement.[20] The density of the peer network and an adolescent's own centrality and popularity in the network may modify the effect of peer relations. Some evidence also suggests that friends' positive, healthy, "prosocial" behaviors may reduce their likelihood of engaging in risky behavior themselves. For example, adolescents' affiliation with "prosocial" peers has been shown to be associated with abstinence from alcohol use, delayed initiation of sexual activity, and protection against violent behavior among youths.[21,22,23]

The HBSC study examined the association of students' health-related behaviors among all countries with the strength of their relationships and the lines of communication with their parents and their peers.[24] HBSC researchers focused on adolescent relationships with family and peers because the quality of communication and social skills are essential contributors to hygiene, nutrition, and physical activity, all of which are related to the risk of health impairments later in life. As noted above, both the physical and mental health of an adolescent, including communication factors, are probably a function of both the family environment and dynamics.[3]

The analysis measured the strength of parental communication difficulties with the following attributes: difficulty talking to elder siblings, difficulties talking to friends, difficulties making friends, having a low number of close friends, time spent with friends after school, and feeling

Factors Associated with Difficulties in Talking to Parents

Young people who report difficulties in talking to their parents:	11-year-olds		13-year-olds		15-year-olds		Statistical method
	Boys	Girls	Boys	Girls	Boys	Girls	
Have more difficulties talking to elder siblings	■	■	■	■	■	■	Pearson Correlation
Have more difficulties talking to friends							Pearson Correlation
Have more difficulties making friends							Pearson Correlation
Have a low number of close friends		■					χ^2
Spend more time with friends after school							χ^2
Feel less happy		■		■		■	Student s *t*
Feel less healthy							Student s *t*
Feel lonely more often							Pearson Correlation
Feel helpless more often							Pearson Correlation
Smoke more often				■			χ^2
Drink alcohol more often				■		■	χ^2
Have more experience of drunkenness		■					Student s *t*

Strength of association

None	Medium	Strong
		■

40

BEST COPY AVAILABLE

less happy, less healthy, lonely more often, helpless more often, smoking more often, drinking alcohol more often, and having more experience of drunkenness. The analysis also examined changes with age.

Compared to students with easy parental communications, young people who report difficulties in talking to their parents are more likely to experience similar difficulties with elder siblings, possibly indicating poor family communication in general. Students who do not report difficulties in talking to their parents find it easier to make friends, particularly among 11- and 13-year-old girls. Those who report difficulties talking with parents spend more time with friends after school. This association decreases with age and is not present for 13- and 15-year-old girls. Young people who spend more time with friends find it easier to make new friends, have more friends, and find it easier to talk to friends. However, spending more time with friends after school is also associated with smoking, drinking, and more experience with drunkenness.

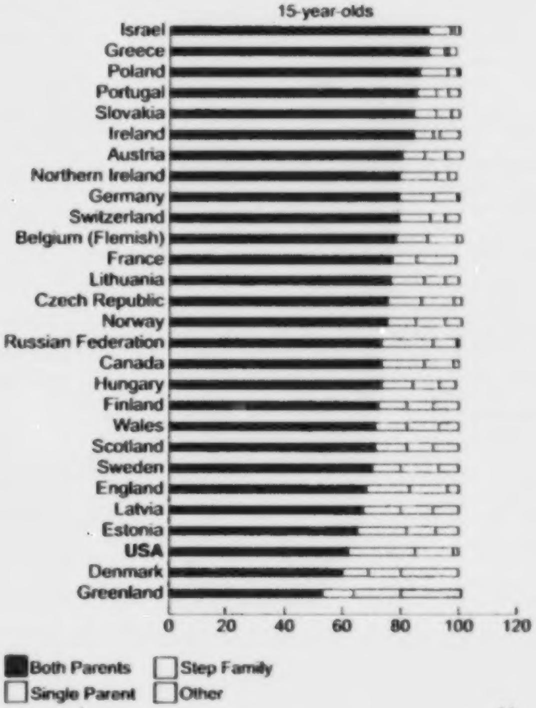
For 11-year-old girls, difficulties talking with parents is associated with feeling less healthy. This association is not found for older girls or for boys at any age. Feeling lonely is associated with poor family communication mainly for girls. Negative moods such as feeling helpless or lonely were moderately associated with difficult parental communication for girls of all ages and 13-year-old boys. Interactions of poor family communication, negative moods, and the influence of the peer group are strongly associated with use of tobacco and alcohol. Strong direct associations are seen between smoking and difficulties talking to parents for girls.

The following charts show how U.S. students compare to students from other countries in measures related to family and peer relations with data from the HBSC study. These charts measure current social resources and behavior, a product of life experience and the students' own choices, such as becoming more independent of their parents. Family structure (who lives in the household) and previous instability in living arrangements are also strong precursors to family communication.[12,13,14,15,16]

Data for both genders are combined since there were no significant differences. The U.S. ranks just after Greenland and Denmark in the low proportion of students living with both parents (62 percent). The U.S. had the highest proportion of students living with single parents (23 percent), and ranks fourth for living with step-parents (13 percent). The proportion of students living with both parents in the U.S. decreased slightly from 67 percent at age 11 and 65 percent at age 13 with most of the change accounted for by increases in the proportion living in step-families.

With Whom Do You Live?

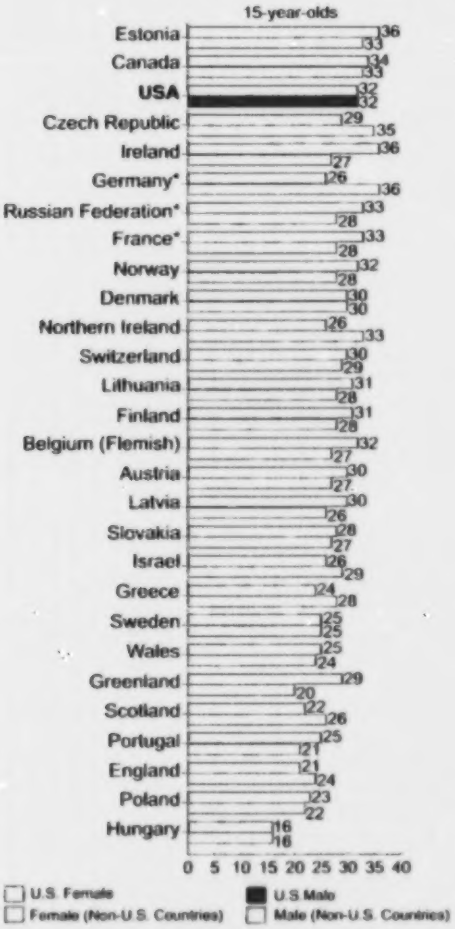
Percent living with both parents, step families, single parents, and others



About one-third of U.S. 15-year-old students had difficulty talking to their mothers, an increase from about one-fifth among 11 year olds.[1] While ranking in the top three countries for difficulties (at all ages),[1] the U.S. was only slightly higher than average. Across countries, 28 percent of 15-year-olds on average reported difficulties talking to their mothers, ranging from 16 to 36 percent. Few countries showed a marked gender difference and most showed that older students reported more problems than younger students.

How Easy Is It For You To Talk To Your Mother About Things That Really Bother You?

Percent finding it difficult or very difficult



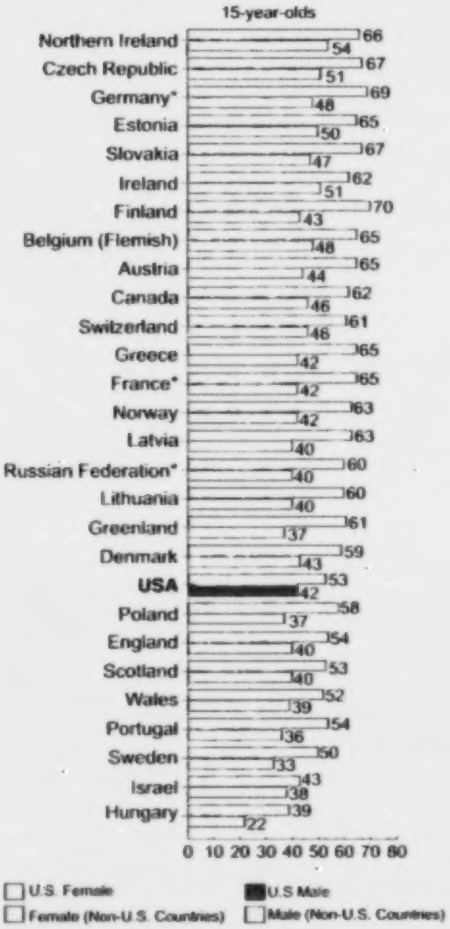
France, Germany and Russia are represented only by regions

Fifty-three percent of U.S. girls and 42 percent of boys reported difficulty communicating with their fathers. The U.S. ranking compared to other countries deteriorated with age.[1]

In all countries, more students reported difficulties talking to their fathers than their mothers at each age. Girls experienced these difficulties with greater frequency than boys and difficulties were more prevalent among older students. The U.S. ranked fifth among all countries in proportion of students saying it was easy for them to

How Easy Is It For You To Talk To Your Father About Things That Really Bother You?

Percent finding it difficult or very difficult



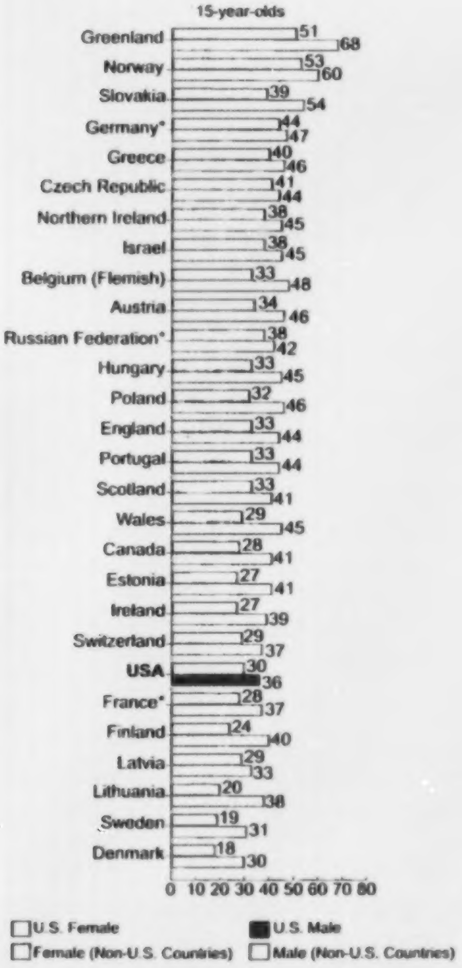
France, Germany and Russia are represented only by regions

make new friends (85 percent), with no significant differences between genders or strong differences across ages.[1] The U.S. ranking improved with age relative to other countries. However, differences among countries are small, with approximately three-quarters of all students finding making new friends easy.

About one-third of U.S. students report spending time with friends after school 4-5 days per week.

How Often Do You Spend Time With Friends Right After School?

Percent spending time with friends 4-5 days a week



*France, Germany and Russia are represented only by regions

The U.S. ranks within the lowest third of countries for percent of students reporting that much time, with ranges from 30 percent of boys in Denmark to 68 percent in Greenland; 18 percent of girls in Denmark to 51 percent in Greenland. In all countries, almost all students report spending time with friends after school at least once a week, with boys generally reporting more time spent with friends.

What didn't we know?

As the National Academy of Sciences Report on the interplay of biological, behavioral, and societal influences emphasized, family and peer relationships are complex.[1] Without longitudinal and genetic studies, the causal effects from family and peer relations remain difficult to trace. The limited family and peer relations factors measured by the HBSC are only indicators of complex societal, family, and individual interactions. Part of the family context are the intergenerational and genetic influences working within the larger social and physical environment. Each student both influences and is influenced by the social network in which he or she lives.

The social factors of family structure, family communication, ease in making friends, and time spent with friends are highlighted in this report because U.S. students differ from other countries in these areas. The larger international report did not address other aspects either.[24] They serve only to raise questions about how they may be part of the interplay between the biological and societal influences on student health and health behaviors.

Other research was reviewed for similarities to what we learned from the HBSC study about the association of difficulty with parental communication with other psychosocial risk factors and risk behaviors. The in-depth research review by Repetti and others on effects of risky families on the mental and physical health of children addresses vulnerabilities, including genetic factors, that could lead to such problems.[3] Risky families are characterized by conflict and aggression and by relationships that are cold, unsupportive, and neglectful. Some of the research addressed communication patterns, which certainly may be a factor in families' impact on children's development of basic physiological systems, ability to handle emotions, and social competence. Another review of research on family strengths emphasizes the need to define what works for families managing multiple stresses in daily life, again including good communication in addition to positive parental mental health, household routines, sufficient quality time together, involvement, monitoring, and supervision.[25] This article stresses that the role of culture, including ethnic differences, affects family processes and relationships in ways that we don't currently understand or assess well.

Findings from the AddHealth study show that the physical presence of a parent in the home at key times reduces some risks, particularly for substance abuse,[11] and another AddHealth study indicates that no more than 10 percent of the variance explaining student smoking, drinking, suicide thoughts or attempts, involvement in violence, and sexual intercourse could be accounted for by family structure, race/ethnicity, and income together.[16] Across these studies, parental connectedness (feelings of warmth, love, and caring from parents) remains the most important factor.

Provisional analysis by KM Harris, et al, of AddHealth data related to family structure and context addresses variation in parenting behaviors and parent-child relationships and their effect on substance use, delinquency, violence, and sexual activity. They find that family processes mediate the effects of family structure for all four outcomes, especially the effects of living in single-father and surrogate-parent families. Accounting for family structure, family context and other factors, family processes that involve joint decision making, close and satisfying parent-child relations, and shared time in activities and meals promote the health development of youth and protect adolescents from engaging in risky behavior. They also find evidence that parental control of youth behavior is more effective when parents and youth share close emotional bonds. Other provisional work suggests that the quantity of fathers' involvement is linked to parents' socioeconomic status and quality of father-child bond is related to the type of father figure in the home.

Since the U.S. has the highest proportion of students living with single parents and is among the highest ranked for students living with step-parents, we need to understand more about the effects of family structure on health, well-being, fitness, and family and peer relationships. The social and ethnic diversity of U.S. students and families adds complexity to the dynamics of family structure given such issues as immigration, acculturation, language, and mobility. One important question raised by this study is whether students in single or step-families are more or less likely to have communication difficulties than students living with both parents, and whether other factors, such as the gender of the student, his or her race and ethnicity, or the family's economic status influence the effect of family structure on adolescents' health and behavioral outcomes.

The population of children in immigrant families has grown by almost 50 percent during the 1990's.[26] Children in immigrant families are more likely than the native-born to be poor, live in crowded housing, to lack a usual source of health care, and to be in fair or poor health.[27] Yu, et al, used the HBSC data to assess the well-being of U.S. adolescents whose primary language spoken at home was other than English, a measure of acculturation.[28] This study found that, compared to those who usually speak English at home, adolescents who usually speak another language at home face greater risks for poor health factors, psychosocial and school risk factors, and less parent support, regardless of race or ethnicity. In this analysis, students with a primary language other than English at home are more likely to have difficulty making new friends, not feel accepted by other students, not feel as though they belong at school, and have difficulty talking to either parent about things that bothered them. They feel that their parents are less supportive and less willing to help with school problems or talk with teachers.

Family structure and the diversity of our population adds to the complexity of our questions about family communication, relationships, and peer relations as they affect health, well-being, and fitness. These family and peer relations obviously exert influence on the school environment as well.

REFERENCES

1. National Academy of Sciences Committee on Health and Behavior. Health and Behavior: The interplay of biological, behavior, and societal influences. Washington, DC: National Academy Press, 2001;pages 19-29. (Available at http://nap.edu.)

2. National Research Council and Institute of Medicine. From Neurons to Neighborhoods: The science of early childhood development. Committee on Integrating the Science of Early Childhood Development. JP Shonkoff and DA Phillips, Eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, DC: National Academy Press, 2000;pages 1-69.

3. Repetti RL, Taylor SE, Seeman, TE. Risky families: Family social environments and the mental and physical health of offspring. Psychological Bulletin 2002;128:330-366.

4. National Research Council and Institute of Medicine. Risks and opportunities: Synthesis of studies on adolescence. Forum on Adolescence. MD Kipke, Ed. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, DC: National Academy Press, 1999;pages 6-17.

5. Riccio-Howe LA. Health values, locus of control, and cues to action as predictors of adolescent safety belt use. Journal of Adolescent Health 1991;12:256-262.

6. Bailey SL, Hubbard RL. Developmental variation in the context of marijuana initiation among adolescents. Journal of Health and Social Behavior 1990;31:58-70.

7. Turner RA, Irwin CE, Tschann JM, Millstein SG. Autonomy, relatedness, and the initiation of health risk behaviors in early adolescence. Health Psychology 1993;12(3):200-208.

8. Hawkins JD, Catalno RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood. Psychological Bulletin 1992;112:64-105.

9. Prinstein MJ, Boergers J, Spirito A. Adolescents and their friends' health-risk behavior: Factors that alter or add to peer influence. Journal of Pediatric Psychology 2001;26(5):287-298.

10. Spear HJ, Kulbok PA. Adolescent health behaviors and related factors: A review. Public Health Nursing 2001;18(2):82-93.

11. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997;278:823-832.

12. Amato PR, Keith B. Parental divorce and the well-being of children: A meta-analysis. Psychological Bulletin 1991;110:26-46.

13. Garnefshi N, Diekstra RF. Adolescents from one parent, stepparent and intact families: Emotional problems and suicide attempts. Journal of Adolescence 1997;20:201-208.

14. Moore KA, Miller BC, Sugland BW, Morrison DR, Glei DA, Blumenthal C. Beginning too soon: Adolescent sexual behavior, pregnancy and parenthood. A review of research and interventions [On-line]. (Available at http://aspe.hhs.gov/hsp/cyp/xsteesex.htm.)

15. Astone N, McLanahan S. Family structure, parenting practices and high school completion. American Sociology Review 1991;56:309-320.

16. Blum RW, Beuhring T, Shew ML, et al. The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. American Journal of Public Health 2000;90:1879-1884.

17. Lynskey MT, Fergusson DM, Horwood LJ. The origins of the correlations between tobacco, alcohol, and cannabis use during adolescence. Journal of Child Psychology and Psychiatry and Allied Disciplines 1998;39:995-1005.

18. Kandel DB. Homophily, selection, and socialization in adolescent friendships. American Journal of Sociology 1978;84:427-436.

19. Keenan K, Loeber, et al. The influence of deviant peers on the development of boys' disruptive and delinquent behavior: A temporal analysis. Development and Psychopathology 1995; 7:715-726.

20. Haynie DL. Delinquent peers revisited: Does network structure matter? American Journal of Sociology 2001;106:1013-57.

21. Spoth R, Redmond C, Hockaday C, Yoo S. Protective factors and young adolescent tendency to abstain from alcohol use: A model using two waves of intervention study data. American Journal of Community Psychology 1996;24:749-770.

22. Bearman P, Brückner H, Brown BB, Theobald W, Philliber S. Peer Potential: Making the most of how teens influence each other. Washington DC: National Campaign to Prevent Teen Pregnancy, 1999.

23. Group for the Advancement of Psychiatry. Violent behavior in children and youth: Preventive intervention from a psychiatric perspective. Journal of the American Academy of Child and Adolescent Psychiatry 1999;38:235-241.

24. Currie C, et al. (ed.) Health and Health Behaviour among Young People. WHO Policy Series: Health Policy for Children and Adolescents, Issue 1. (Available at http://www.hbsc.org)

25. Moore KA, Chalk R, Scarpa J, Vandivere S. Family strengths: Often overlooked but real. Washington, DC: Child Trends Research Brief, 2002. (Available at www.childrends.org.)

26. Hernandez DJ, Charney E, eds. From Generation to Generation: The health and well-being of children in immigrant families. Washington, DC: National Academy Press, 1998.

27. Capps R. Hardship among Children of Immigrants: Findings from the 1999 National Survey of American's Families. New Federalism: National Survey of America's Families, Series B, No. B-29. Washington, DC: The Urban Institute, 2001.

28. Yu SM, Huang ZJ, Schwalberg RH, Overpeck M, Kogan MD. Acculturation and the health and well-being of U.S. immigrant adolescents. J Adolescent Health (in press).

CHAPTER FOUR

SCHOOL ENVIRONMENT

SCHOOL ENVIRONMENT

School is an important and pervasive influence on children's education, health, well-being, and development.[1,2] During U.S. students' twelve years of compulsory education, schools provide structured learning activities, establish norms for personal and social behavior, and offer opportunities for civic, social, and co-curricular activities and experiences. Schools expose children to adult role models in the form of teachers and administrators, whose job it is to impart both knowledge and understanding of subject matter as well as motivation to achieve. Also, many other school programs, including school food services, counseling services, and formal health and physical education instruction, directly affect health and well-being.[3] School programs foster the identification of health-related issues and address developmental, learning, health, and social problems. Hence, there is increasing interest in how schools are organized, the effectiveness of school programs and policies, and how students perceive their schools.[4,5]

Recent research has emphasized the link between students' perceptions of school and their motivation, achievement, and behavior. Students who like and feel connected with school may be more motivated to achieve academically[6,7] and less motivated to engage in anti-social behavior than children who feel disconnected from it.

Societal expectations for school are substantial. Primarily, Americans want schools to produce students who achieve academically and behave respectfully. However, an over-emphasis on academic achievement and discipline, without concern for students' positive affiliation with school, can undermine student morale and motivation.[4] Social development[9] and social 'bonding' theories[10] argue that commitment to social institutions, including family and school, provide important protection against anti-social behavior and encourage academic effort and self-control. The typical school environment, characterized by an emphasis on rules, control, and discipline, may conflict with the adolescent's developmental needs for increased autonomy, opportunities to demonstrate competence, exposure to caring and support from adults, developmentally appropriate supervision, and acceptance by peers, and can undermine positive affiliation with school and academic engagement.[6,7,11]

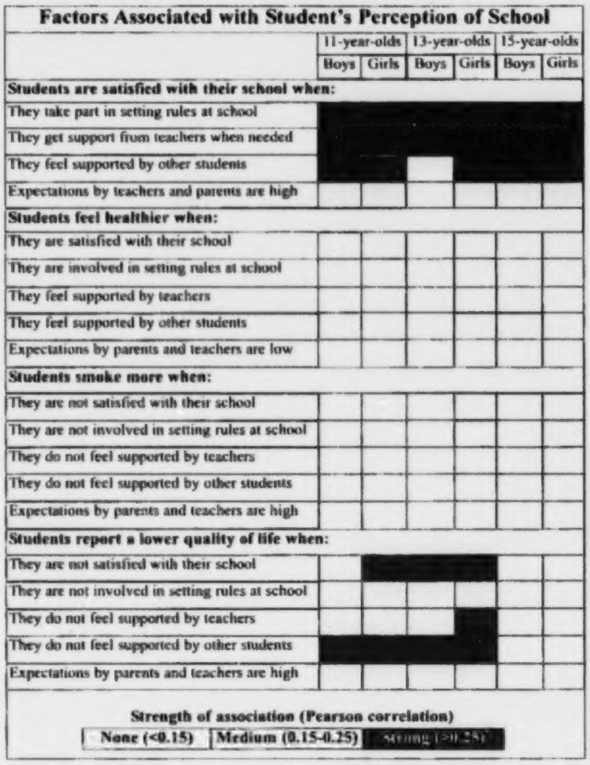
An extensive review of research on adolescence emphasized the importance of a positive school environment in preventing problem behavior.[12] The U.S. National Longitudinal Study of Adolescent Health (AddHealth) found that students who reported being more connected with school were less likely to use cigarettes, alcohol, or illegal drugs, engage in aggressive and violent behavior, and get pregnant.[13,14,15] An analysis of AddHealth concluded that connectedness, the feeling that one belongs and is cared for at school, is a crucial requirement for student health and well-being.[14] However, according to Blum et al.,[15] the potential of schools to promote positive health behavior is largely untapped.

School connectedness, it appears, is one good way of characterizing the relationship between children and their schools. However, connectedness may be best understood within a broader view of children's "developmental assets." The developmental assets approach provides a way of thinking about the wide range of possible personal and socio-environmental assets that can help young people grow up to be healthy, caring and responsible. Scales[16] recently noted the potential of schools to foster many of the forty developmental assets identified by providing a caring school climate, safe environment, high expectations for achievement and comportment, and commitment to learning, including achievement motivation, school engagement, and school connectedness and bonding.

By adolescence, a student has acquired many health-related attributes through assets gained and exposure to risks from family, peers and community, including their earlier school experiences.[16] Schools in the U.S. and Western Europe also provide experience in programs specifically tailored to improve health-related attitudes, behaviors, and student well-being.[16,17,18] Many of these behaviors and attitudes have consequences affecting not only the adolescent progression to adulthood and adult health but occurrence of health attributes during each developmental stage.

Results of an analysis of all countries participating in the HBSC study indicate that students appear to be satisfied with their school setting if they take part in establishing school rules, get needed support from teachers or other students, and perceive high expectations from teachers and parents.[1] This international analysis found results similar to the AddHealth study for behaviors such as smoking[13] and for physical activity, but also found associations with student reports of a lower quality of life if school satisfaction is low. Students report feeling healthier when they are satisfied with their school and feel supported by teachers and by other students.

The HBSC study provides an excellent opportunity to examine the teens' perceptions of school and to explore their implications for school policies, programs, and practices. This chapter presents selected findings from the HBSC survey on students' school-related perceptions and attitudes and compares these findings with those from other HBSC study countries.



Factors Associated with Student's Perception of School

	11-year-olds		13-year-olds		15-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls
Students are satisfied with their school when:						
They take part in setting rules at school	■	■	■	■	■	■
They get support from teachers when needed	■	■	■	■	■	■
They feel supported by other students	■	■		■	■	■
Expectations by teachers and parents are high						
Students feel healthier when:						
They are satisfied with their school						
They are involved in setting rules at school						
They feel supported by teachers						
They feel supported by other students						
Expectations by parents and teachers are low						
Students smoke more when:						
They are not satisfied with their school						
They are not involved in setting rules at school						
They do not feel supported by teachers						
They do not feel supported by other students						
Expectations by parents and teachers are high						
Students report a lower quality of life when:						
They are not satisfied with their school		■	■	■		
They are not involved in setting rules at school						
They do not feel supported by teachers				■		
They do not feel supported by other students	■	■	■	■		
Expectations by parents and teachers are high						

Strength of association (Pearson correlation)

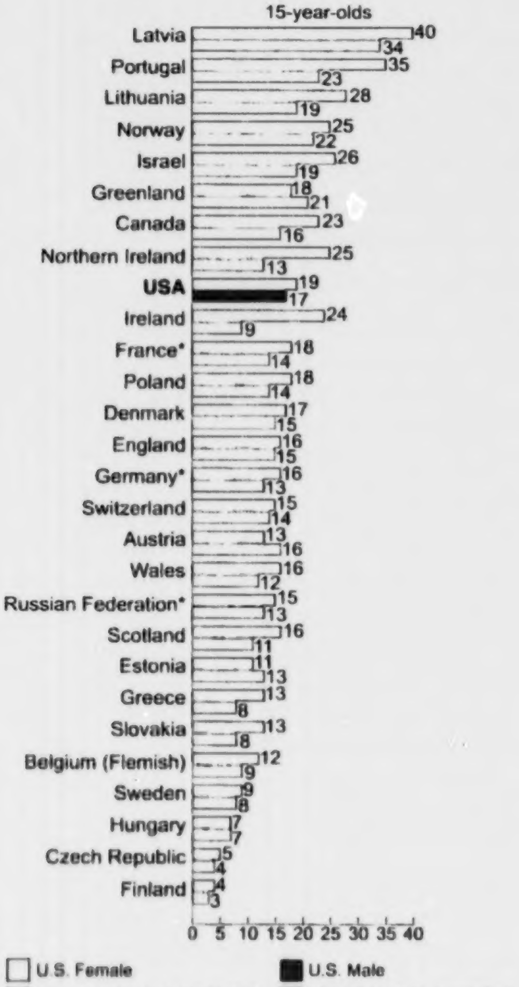
None (<0.15) | Medium (0.15-0.25) | ■ Strong (>0.25)

U.S. students rank among the top third of countries, with 19 percent of girls and 17 percent of boys, liking school a lot. The response choices were: like it a lot, like it a little, don't like it very much, or don't like it at all. The proportion saying that they don't like it a lot means that about 80 percent of U.S. students don't enjoy school very much. Students liking school a lot ranged from 40 percent of girls in Latvia to 5 percent or less in the Czech Republic and Finland. Liking school a lot tends to decrease with age across all countries. More girls than boys liked school in most countries.

BEST COPY AVAILABLE

How Do You Feel About School At Present?

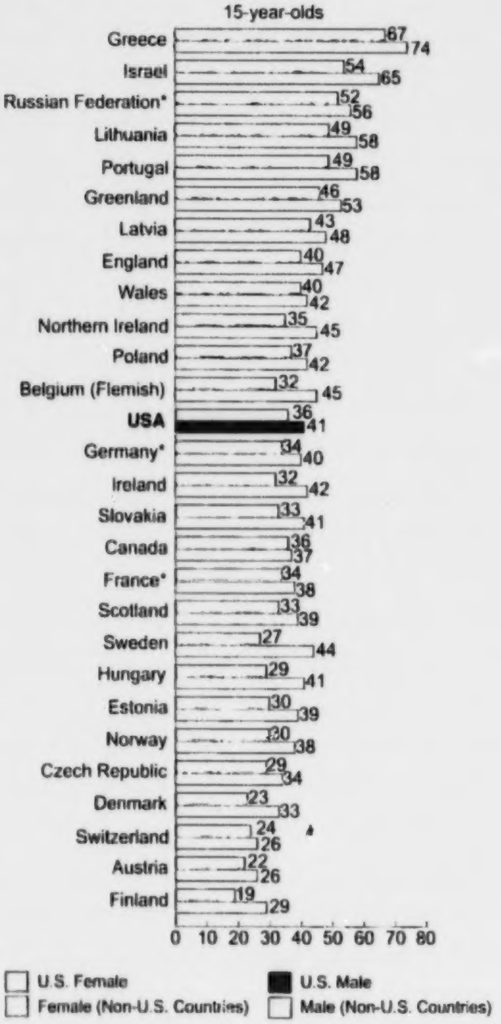
Percent liking school a lot



**France, Germany and Russia are represented only by regions*

"My Parents Expect Too Much Of Me At School"

Percent who agree or strongly agree



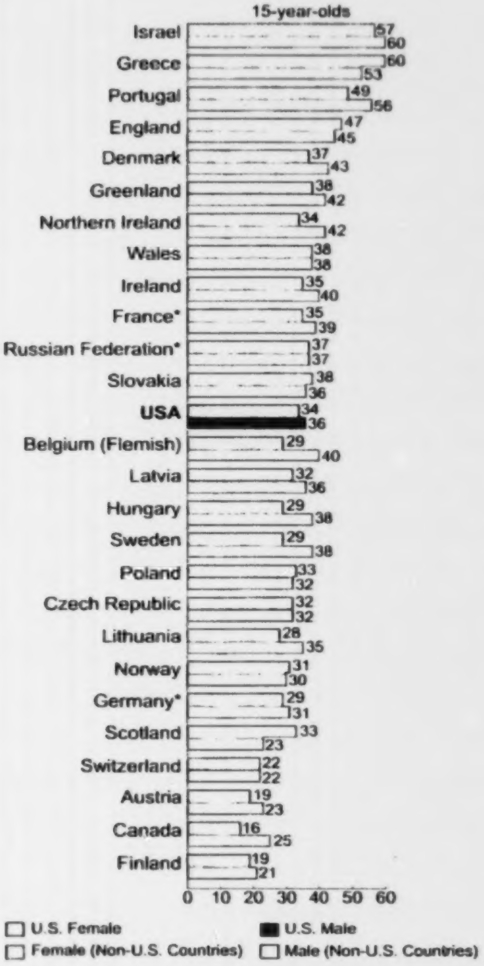
**France, Germany and Russia are represented only by regions*

In their assessment of parental expectations, U.S. students rank in the middle, with 36 percent of girls and 41 percent of boys feeling that their parents expect too much of them at school, compared to nearly three-quarters of students in Greece and one-fifth of students in Finland. Overall, boys complain more of excessive pressure than girls, indicating that boys may feel more challenged or that some parents treat boys and girls differently.

U.S. students are about equally likely to feel high expectations on the part of parents and teachers, with similar rankings among all countries. However, the differences between boys and girls on teacher expectations are not as pronounced as for parental expectations in many countries.

"My Teachers Expect Too Much Of Me At School"

Percent who agree or strongly agree

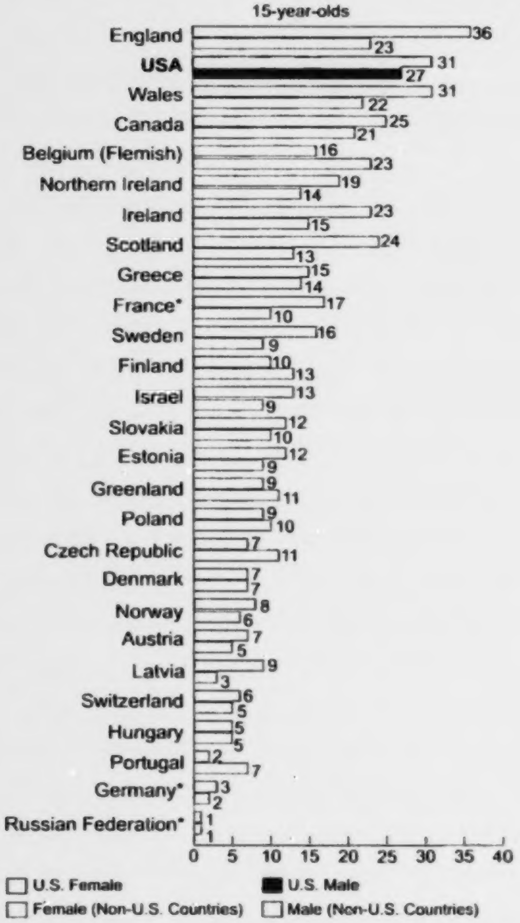


**France, Germany and Russia are represented by regions*

U.S. students rank second highest in the percent of students who felt pressured by their school work, with 31 percent of girls and 27 percent of boys feeling pressured a lot. Few countries have rankings of school stress this high, with most countries reporting between 10-13 percent. Stress from school work increases with age in most countries.

How Pressured Do You Feel By The School Work You Have To Do?

Percent feeling a lot of pressure

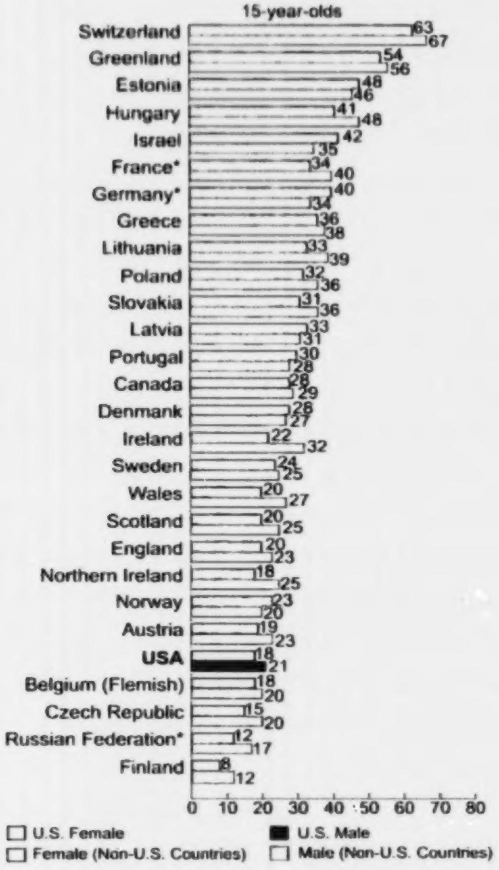


**France, Germany and Russia are represented only by regions*

U.S. students rank among the bottom five countries for students who report that they take part in making school rules, with only 18 percent of girls and 21 percent of boys agreeing with this statement, an improvement from the lowest in rank at age 11 and third lowest at age 13 (data not shown).[1] However, the percentages for U.S. students across age are not significantly different. Countries vary widely in the percent of students participating in the making of school rules, ranging from 8 percent (Finnish girls) to 67 percent (boys in Switzerland). Among other countries, student reports show a general decrease in the sense of participation, sometimes by as much as half between ages 11 and 15.

"In Our School, The Students Take Part In Making Rules"

Percent who agree or strongly agree

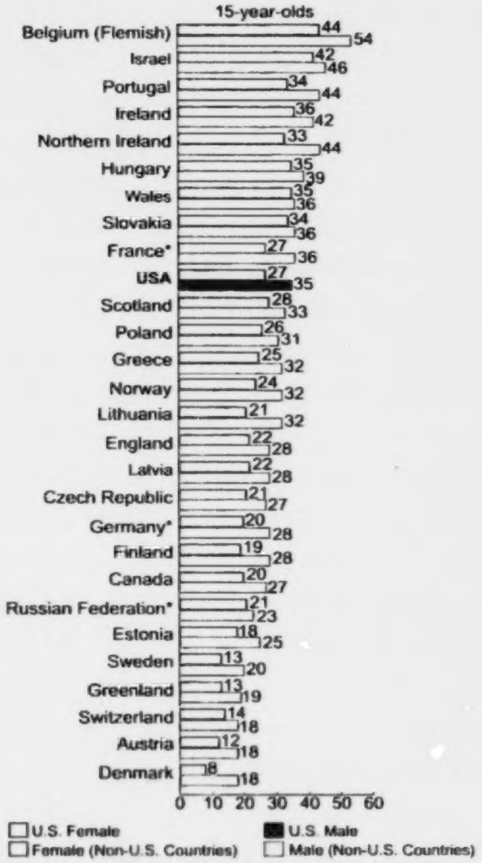


France, Germany and Russia are represented only by regions

U.S. students rank near the top third (10th) among all students who feel that rules are not fair, with 27 percent of girls and 35 percent of boys. The U.S. ranking at age 15 is an improvement compared to ages 11 and 13 years, at sixth and fourth place respectively (data not shown).

"The Students Are Treated Too Severely/ Strictly In This School"

Percent who agree or strongly agree



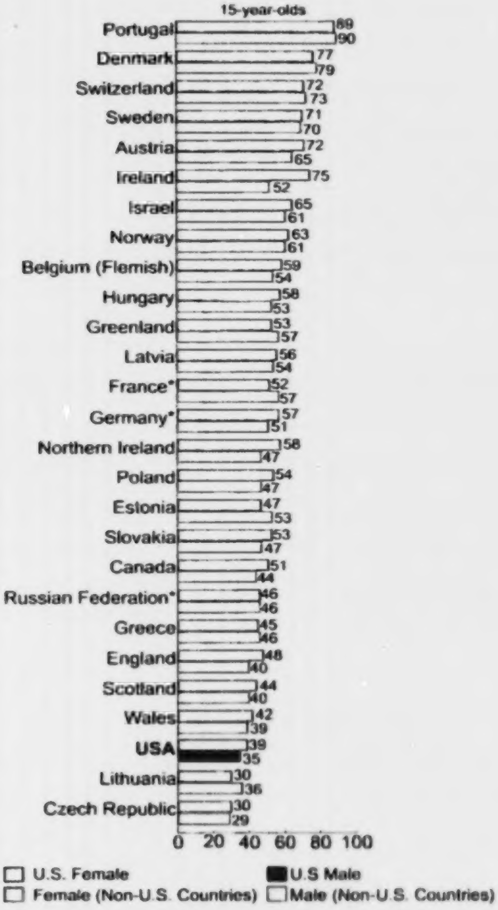
France, Germany and Russia are represented only by regions

Across countries, there is wide variation in the percentage of students who feel this way (8 to 54 percent), although boys outnumber girls in all countries.

U.S. students are among the least likely to agree that their fellow students are kind and helpful (only 39 percent of girls and 35 percent of boys), followed only by Lithuania and the Czech Republic. Across countries there were no marked differences by age or gender in perception of classmates' kindness and help to those in need.

"Most Of The Students In My Classes Are Kind And Helpful"

Percent agreeing often or always



**France, Germany and Russia are represented only by regions*

What didn't we know?

The HBSC revealed a number of perceptions and attitudes about the school environment that are common among all countries, particularly by gender and age. Across countries, girls tended to like school and consider rules to be fair more often than boys. Boys are more likely to feel that parents expect too much of students at school, although this gender difference tends to disappear for teacher expectations. For both genders, enthusiasm and a sense of participation tends to decrease as students age, just as pressure from school work increases as they grow older. Comparisons of U.S. student reports on their school environment indicate that the proportion of U.S. 15-year-old students who are enthusiastic about school (like it a lot) is among the best of countries - even though about four out of five U.S. students like school only a little, not very much, or not at all. U.S. students are among the least likely to feel that they participate in making rules at school or that rules are fair. This sense of lack of participation in rule making and unfairness gets worse as students grow older. U.S. students of all ages also are among the least likely to feel that their classmates are kind and helpful. The research citing a link between student perceptions of school and motivation, academic achievement, and behaviors stresses the importance of feeling connected to school.[6,7,8,12]

The low proportion of U.S. students who feel that they participate in rule-making or that rules are fair, along with the lack of support they perceive from other students, raises concern for the prospect that students will see themselves as future members of a participatory democratic society. Not only are students who feel unconnected more likely to abuse substances, engage in violence, and become pregnant,[13,14,15] but they may be less likely to acquire developmental assets and to experience opportunities to demonstrate competence through increasing autonomy appropriate to their developmental stage.[6,7,8,11,16]

The HBSC did not measure actual student academic achievement, although students were asked how they thought their class teacher(s) would rate their school performance compared to classmates.[1] Comparisons in the HBSC international report show that U.S. students ranked perceptions of their own performance as very high compared to other students in their class. The proportion in the U.S. who thought they were very good at school ranks fourth highest among all countries at each age (data not shown). No HBSC analysis has been completed comparing perceived academic achievement to environmental factors such as parent and teacher expectations, pressure from school work, assessment of fairness of rules and involvement in rule-making, and relationships with overall health, fitness, quality of life or health behaviors.

However, other studies have found associations between academic performance and related factors in U.S. middle school students.[6,7] Two other international studies, the Third International Mathematics and Science Study and Program for International Student Assessment,[19,20] include U.S. students to compare academic performance, although the other countries are not necessarily the same as those in the HBSC. However, these studies do not include the contextual factors of family, peers, and school environment, so the influence of these factors cannot be assessed.

For school factors and other assessments, even nationally representative school-based studies may include a biased sample based on the characteristics of those most likely to complete the questionnaires, as discussed in the chapter on "What's left out." Therefore, students who are struggling in the school environment may be represented in school-based surveys in lower proportions than actually occur in the school's population. In addition, students who have dropped out of school or cannot attend due to severe illness or disability are excluded. Based on these sources of sampling bias, the associations shown from the HBSC and other school-based study analyses may underestimate the significance of the school environment, connectedness, and school failure.

The AddHealth study analysis by McNeely et al. emphasizes that feeling that one belongs and is cared for at school is a crucial requirement for student health and well-being.[14] The HBSC international analysis demonstrated that negative health behaviors, feeling unhealthy, decreased physical activity and low quality of life increase when school satisfaction is low. This finding may have implications for U.S. student reports of relatively high levels of health symptoms and feeling low.[1]

Some of the associations of school environment with overall health and well-being, fitness, family and peer relations, substance use, and violence found in the HBSC and other studies should be examined further in special populations. For example, the U.S. is more racially and ethnically diverse than most of the other countries included in the HBSC.[21] As noted in the chapter on family and peer relations, acculturation also interacts in the school setting.[22] Adolescents who usually speak a language other than English at home face a greater risk for psychosocial and school risk factors with less parental support in the school setting regardless of race or ethnicity. In these analyses, students who primarily speak a language other than English at home are more likely to have difficulty making new friends, be involved in bullying (as either a victim, a bully, or both), not feel accepted by other students, not feel as though they belong at school, and have difficulty talking to either parent about things that bothered them. They feel that their parents are less supportive and less willing to help with school problems or talk with teachers. The HBSC international report did not compare students' perceptions of their parents' willingness to talk to teachers or whether they were ready to help when the student had problems at school, although the survey included these questions. Lack of parental support at school may be associated with the language and cultural barriers faced by immigrant parents in other countries as well as the U.S.

Another analysis of U.S. HBSC data shows differences in psychosocial factors associated with being a victim of bullying, including those students who are both a bully and a victim.[23] These factors include feelings of isolation in the school environment, lack of parental support, loneliness, and the lack of support from other students. Violence among U.S. youth is a primary concern for the public and officials in the school, public health and law enforcement sectors.[24] A recent AddHealth study by Moody shows that teens are more likely to choose friends within their own racial group in moderately racially mixed schools, with the likelihood greatest in schools where diversity is moderately high.[25] However, the analysis also found that in schools with the highest levels of diversity, the likelihood of choosing friends from one's own racial group decreases, and students are more likely to form friendships with people in other groups. Since U.S. students in the HBSC study are among the least likely to feel that other students are kind and helpful, we should investigate both the social and structural aspects of school and community life in the U.S. that detract from a supportive school environment.

While schools are required to provide a solid education while managing many of the social and physical attributes that students bring from their larger family and community environments, the opportunity to build better school connectedness and support for health and well-being exists. Formal and informal instruction exists to directly address physical health and well-being through programs such as school health guidelines on areas related to healthy eating, injury and violence, physical activity, tobacco use, and AIDS.[26,27]

A report based on the AddHealth study results suggests that current efforts to improve school connectedness are being applied in some venues.[15] The American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health has issued a policy statement affirming their commitment to prevention, early detection, and management of behavioral, developmental, and social problems as a focus in pediatric practice.[28] In addition, they address the need to advocate for children's mental health needs and become familiar with mental health referral processes and community resources to ensure access and continuity of services. In particular, they emphasize the physician's need to address psychosocial issues involved in diagnosing and treating school-related disorders and other problems that have been better identified through recent research: learning disabilities and attention difficulties, child and adolescent mood and anxiety disorders, adolescent suicide and homicide, firearms in the home and school violence, drug and alcohol abuse, human immunodeficiency virus and acquired immunodeficiency syndrome, and the effects of media on violence, obesity, and sexual activity. Recommendations from research on findings that strong school and family ties protect teens from violence, substance use, suicide and early sex may also be found in a briefing paper prepared by NICHD's Demographic and Behavioral Sciences Branch.[29] The following chapters describe findings related to substance use and violence across countries.

REFERENCES

1. Samdal O, Dur W. The school environment and health of adolescents. In: Currie C, Hurrelman K, Settertobulte W, Smith R, Todd J, Health and Health Behaviour among Young People. WHO Policy Series: Health Policy for Children and Adolescents Issue 1. Copenhagen, Denmark: World Health Organization Regional Office for Europe, 2000.

2. Masten AS, Coatsworth JD. The development of competence in favorable and unfavorable environments: Lessons from research on successful children. American Psych 1998;53:205-220.

3. Kolbe LJ. Developing a plan of action to institutionalize comprehensive school health education programs in the United States. Journal of School Health 1993;63:12-13.

4. Anderman EM, Maehr ML, Medgley C. Declining motivation after the transition to middle school: Schools can make a difference. Journal of Research and Development in Education 1999;32:131-147.

5. Eccles JS, Midgefield C, Wigfield A. Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and families. American Psychologist 1993;48:90-101.

6. Roeser R, Eccles JS. Adolescents' perceptions of middle school: Relation to longitudinal changes in academic and psychological adjustment. Journal of Research on Adolescence 1998; 8:123-158.

7. Eccles JS, Wigfield A, Midgley C, Reuman D, MacIver D, Feldlaufer H. Negative effects of traditional middle schools on students' motivation. Elementary School Journal 1993;93:553-574.

8. Simons-Morton BG, Crump AD, Haynie DL, Saylor KE. Student-school bonding and adolescent problem behavior. Health Education Research 2001;14:99-107.

9. Hawkins JD, Weis JG. The social development model: An integrated approach to delinquency prevention. Journal of Primary Prevention 1985;6:73-97.

10. Gottfredson MR, Hirschi T. A general theory of adolescent problem behavior: Problems and prospects. In: R.D. Ketterlinus and ME Lamb (Eds.) Adolescent Problem Behaviors: Issues and Research. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc., 1994;pages 41-56.

11. Eccles JS, Early D, Frasier K, Belansky E, McCarthy K. The relation of connection, regulation, and support for autonomy to adolescents' functioning. Journal of Adolescent Research 1997;12:263-286.

12. Kipke MD. Risks and Opportunities: Synthesis of Studies on Adolescence. Washington, DC: National Academy Press, 1999.

13. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA. 1997;278:823-832.

14. McNeely CA, Nonnemaker JM, Blum RW. Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. Journal of School Health 2002;72:138-146.

15. Blum RW, McNeely CA, Rinehart PM. Improving the odds: The untapped power of schools to improve the health of teens. Minneapolis, MN: Center for Adolescent Health and Development, University of Minnesota, 2002.

16. Scales PC. Reducing risks and building developmental assets: Essential actions for promoting adolescent adolescent health. Journal of School Health 1999;69:113-119.

17. Centers for Disease Control and Prevention. School Health Program Guidelines. (Available at: http://www.cdc.gov/needphp.dash/guidelines.)

18. European Network of Health Promoting Schools Program. (Available at http://www.euro.who.int/eprise/main/WHO/Progs/ENHPS.)

19. National Center for Educational Statistics. Third International Mathematics and Science Study. Washington, DC: U.S. Dept. of Educa-

tion. (Description and Reports available at: http://www.nces.ed.gov; last accessed on September 2002.)

20. National Center for Educational Statistics. Outcomes of Learning: Results from the 2000 Program for International Student Assessment of 15-year-olds in Reading, Mathematics, and Science Literacy (PISA). Washington, DC: U.S. Dept of Education Pub. No. NCES 2002-115, 2001. (Also available at http//:www.nces.ed.gov; last accessed on September 2002.)

21. Hernandez DJ, Charney E. (eds.) From Generation to Generation: The health and well-being of children in immigrant families. Washington, DC: National Academy Press, 1998.

22. Yu SM, Huang ZJ, Schwalberg R, Overpeck MD, Kogan MD. Acculturation and the health and well-being of U.S. immigrant adolescents. J Adolescent Health (in press).

23. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton BG. Bullying behaviors among the U.S. youth: Prevalence and association with psychosocial adjustment. JAMA 2001;285(16):2094-2100.

24. U.S. Department of Health and Human Services. Youth violence: A report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, 2001.

25. Moody J. Race, school integration, and friendship segregation in America. American Journal of Sociology 2001;107(3):679-716.

26. Kann L, Collins JL, Patemena BC, Small ML, Russ JG, Kolbe LJ. The school health policies and programs study (SHPPS): Rationale for a nation-wide status report on school health program. Journal of School Health 1995;22:291-293.

27. National Center for Chronic Disease Prevention and Health Promotion. Adolescent and School Health: School Health Program Guidelines. (Available at http://:www.www.cdc.gov/nccdphp/dash/guidelines; last access on September, 2002.)

28. American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health. The new morbidity revisited: A renewed commitment to the psychosocial aspects of pediatric care. Pediatrics 2001;108:1227-1230.

29. Demographic and Behavioral Sciences Branch. Research on Today's Issues: Strong school, family ties protect teens from violence, drugs, suicide and early sex. Briefing Papers, Issue No 1. Bethesda, MD: National Institute of Child Health and Human Development, 1998.

CHAPTER 5

SMOKING AND ALCOHOL USE

SMOKING AND ALCOHOL USE

Although legal for adults, tobacco and alcohol are illicit substances for adolescents in the United States. In nearly all of the HBSC countries included in the study, alcohol sales are prohibited for children under at least age 15, with the legal age ranging from 15 in Denmark to 21 in the United States; only Greece and Portugal do not restrict alcohol sales to minors.[1] Laws restricting the sale and distribution of tobacco to minors vary as well, from a minimum age of 18 in several countries, including Estonia, Hungary, Lithuania, and Sweden, to no restriction at all in Israel.[2]

Whether legal or not, the use of alcohol and tobacco has well-documented and far-ranging health consequences in both the short and long terms. Both tobacco and alcohol use are considered top contributors to mortality and morbidity in the United States.[3] Long-term risks associated with tobacco include emphysema, cancer, and cardiovascular disease, which begins as early as two years following the onset of regular smoking.[2] Short-term health effects of smoking include shortness of breath on exertion, abnormal lung function, and periodontal disease. In addition, tobacco smoke is a potent trigger of asthma attacks, and maternal smoking is associated with complications of pregnancy and low birth weight.

Research shows that significant adverse effects can occur both in youth and in adults from use of alcohol, which impairs decision-making and heightens the risk of engaging in health- and life-threatening behavior. Important problematic issues include driving under the influence, fighting, unplanned sex, and binge drinking, including drinking to the point of alcohol poisoning. Long-term abusers of alcohol are at risk for serious debilitating effects during adulthood, including liver and neurological diseases, cardiac impairment, and stroke.[4] Even during adolescence, abnormal physiological effects of regular alcohol use have been documented. Adolescents who have diagnosed alcohol problems are likely to have evidence of subclinical liver damage.[5] In addition, adolescent females who consume alcohol on a regular basis may alter the normal timing and progression of their puberty because of interference with the production of regulatory hormone systems.[6]

Problem use of alcohol is also associated with unintentional injury. About one third of deaths due to unintentional injury in the United States are related to alcohol. Individuals who start drinking before the age of 21, especially those who start drinking as adolescents, are at least twice as likely to experience alcohol-related injuries as those who start drinking alcohol after age 21.[7] In particular, individuals who start drinking before age 21 are more likely to report driving after drinking as well as being involved in alcohol-related motor vehicle crashes.[8] A similar relationship has been found between the age of drinking onset and involvement in physical fighting.[9]

Most lifelong users of tobacco and alcohol begin in their adolescence.[10,11] Thus, monitoring and prevention of smoking and alcohol use among youth is essential for improving the health and longevity of the population as a whole. Trajectories for tobacco and problem use of alcohol have some similarities and some differences. Adolescence is the time when individuals are most likely to start smoking, and nicotine addiction starts during adolescence among youth who smoke on a regular basis. In contrast, although drinking alcohol during adolescence is normative behavior and some adolescents certainly become addicted to alcohol, rates of alcohol dependence peak during the third and fourth decades of life (about ages 20 to 40). However, those who start drinking alcohol before the age of 15 are more likely to become dependent on alcohol than those who start drinking alcohol at age 21 or older.[12] Both nicotine and alcohol addiction carry a significant delay between their onset and the full development of adverse health consequences.

An analysis performed across all HBSC countries and published in the HBSC international report analyzes family, peer, and school contextual associations with smoking and drinking. It shows that students who simply experimented with smoking are more likely to have had experiences with drinking alcohol, including being drunk, as well as disliking school and being truant from school, regardless of age or gender. Younger adolescents who smoked experimentally, including all 11-year-olds and 13-year-old boys, feel pressured by school, but this effect dissipates for 13-year-old girls and all 15-year-olds. Students who smoked experimentally report spending more time with friends after school and in the evening. Both boys and girls who ever experimented with smoking tobacco report having difficulty talking to their fathers, and girls report difficulty talking to their mothers. 13-year-olds who smoked experimentally also report feeling less happy, and 15-year-olds report feeling less healthy.

In the HBSC cross-country analysis, students at ages 13 and 15 who currently smoke frequently feel less healthy and also spend more time with friends after school and in the evenings than nonsmokers. Although they were truant more often and dislike school, established smokers do not feel pressured by school. In addition, among all ages surveyed, daily smokers are more likely to have had an alcoholic drink, to drink beer more frequently and to be drunk more frequently.

Findings are similar for students who drink alcohol more frequently or who had been drunk more than twice. They are also more likely to spend time with friends after school and in the evening (13- and 15-year-olds), and are more likely to be truant from school and to dislike school (all students except 11-year-old girls). In addition, 13- and 15-year-old girls who had been drunk at least twice report feeling less healthy. There are also strong associations between being drunk at least twice and smoking.

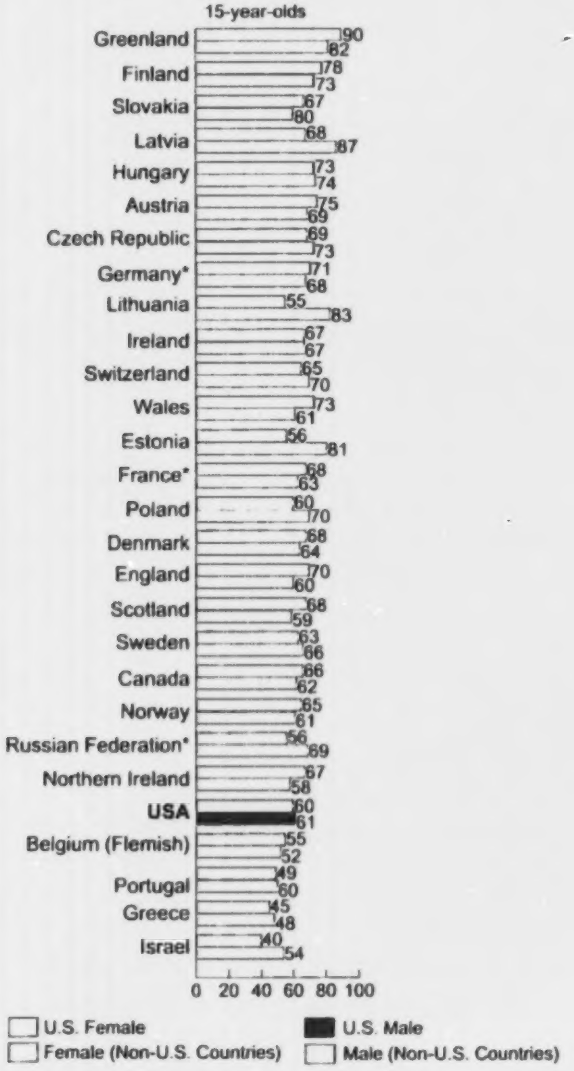
Although the contextual analysis shows a strong relationship between use of tobacco and drinking alcohol, this relationship does not hold for all countries. For example, students in a few countries, such as Greenland, Finland, and Norway, report relatively high proportions who smoke but relatively low proportions who drink. Conversely, Greece and, to a lesser extent, Denmark, reported lower rates of tobacco use but higher proportions of students who drink.

Based on data from the HBSC Study, the following charts show how U.S. students compare to students from other countries in measures of smoking and alcohol use. These charts measure experimentation with smoking (smoking at least one time); daily smoking, which demonstrates habituation and addiction to nicotine; regular use of alcohol based on weekly drinking of beer, wine or spirits; and a history of being drunk at least twice, which connotes excessive use of alcohol episodically.

Across countries, the lowest proportions who ever experimented with tobacco are among 11-year-olds, as would be expected. In most countries, less than 20 percent of 11-year-olds had ever tried smoking (data not shown for age groups less than 15 years). However, smoking at least once increased significantly with age: 40-50 percent of 13-year-olds and 60-70 percent of 15-year-olds reported smoking at least once. Although wide variation existed across countries, students from countries with lower proportions of experimental smoking at age 11 also tend to have lower proportions of experimental smoking among 13- and 15-year-olds. Boys are more likely to smoke experimentally than girls, again varying across countries among age groups by gender. U.S. students are in the middle ranking at age 11 for experimental smoking, dropping to eighth lowest ranking at age 13 and fifth lowest at age 15.

Have You Ever Smoked Tobacco?

Percent Ever Having Tried A Cigarette

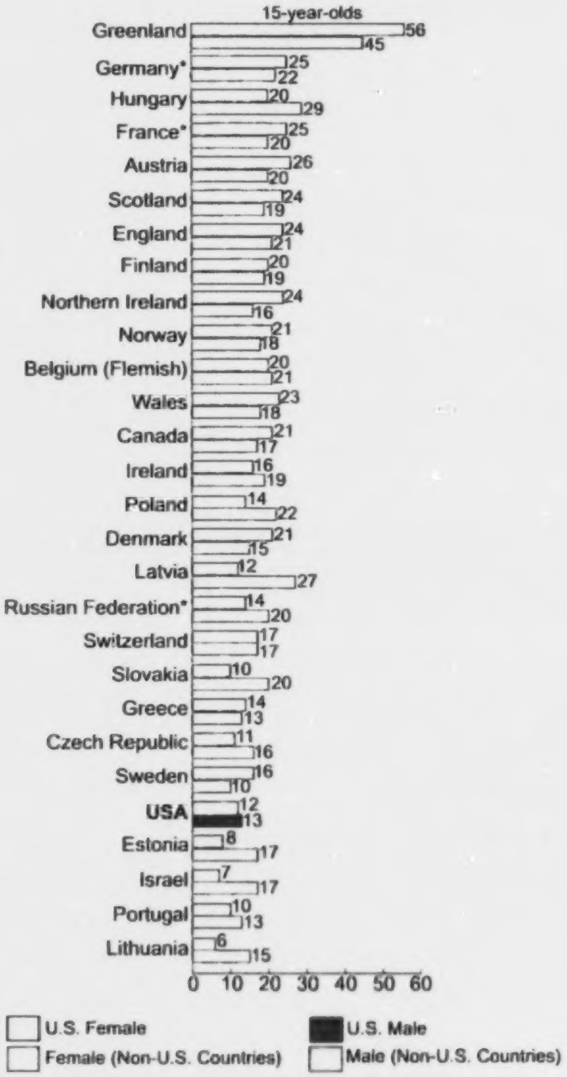


**France, Germany and Russia are represented only by regions*

Across all countries, daily smoking increases substantially with age: proportions of students who smoke daily increases from less than 2 percent for 11-year-olds to less than 10 percent for 13-year-olds and generally to less than 30 percent for 15-year-olds (data not shown for age groups less than 15 years.) Wide variation exists across countries. For 15-year-old females, proportions smoking daily ranges from 56 percent in Greenland to 6 percent in Lithuania.

How Often Do You Smoke Tobacco At Present?

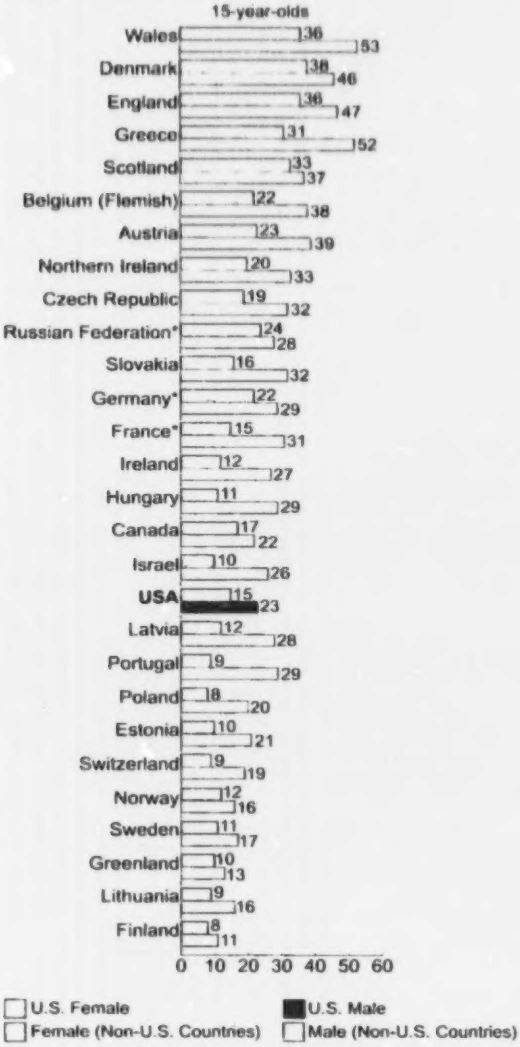
Percent smoking daily



**France, Germany and Russia are represented only by regions*

How Often Do You Drink Beer, Wine, Or Spirits?

Percent drinking alcoholic beverages at least weekly



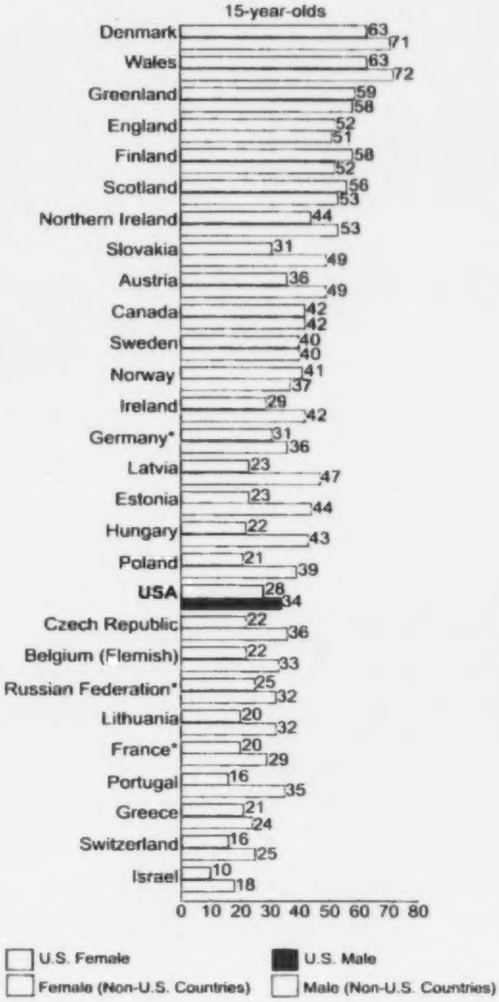
France, Germany and Russia are represented only by regions

Among 15-year-old males, 45 percent smoke on a daily basis in Greenland, compared to only 13 percent in Portugal and the U.S. U.S. students rank among the lowest four countries for daily smoking among 15-year-olds. Although a slightly lower percentage of 15-year-old girls than boys report smoking daily in the U.S., about half of participating countries report more females smoking than males.

As with smoking, the percent of students reporting beer, wine or spirit consumption on at least a weekly basis increases with age (data not shown for all age groups). 15-year-old boys in all countries are more likely to drink than girls. The U.S. is within the middle range of countries, with 15 percent of girls and 23 percent of boys drinking

Have You Ever Had So Much Alcohol That You Were Really Drunk?

Percent having been drunk twice or more



France, Germany and Russia are represented only by regions

these beverages at least weekly. In addition, some countries vary their relative positions by adolescent age group, including the U.S., which is in the top quartile of countries for 11-year-old drinking behavior, but falls to the 40 percent mark for 13-year-olds and to almost the lowest third for 15-year-olds. The international report also shows the proportion of students who drink beer at least weekly (not included here). U.S. students are less likely than the majority of other countries to drink beer, indicating that our relatively comparable ranking for all types of alcoholic beverages is based on drinking higher levels of alcohol in forms other than beer.

The proportions reporting drunkenness on two or more occasions increase steeply across age groups but varies across countries (data not shown for all ages). For example, in the countries in which the highest percentages of adolescents report drunkenness, rates climbed from about 6 to 16 percent of 11-year-old boys, to 23 to 38 percent of 13-year-olds, to 49 to 71 percent of 15-year-old boys. In contrast, in countries reporting relatively low proportions of drunkenness among boys, proportions climb from about 1 percent of 11-year-olds to about 6 to 9 percent of 13-year-olds to about 18 to 35 percent of 15-year-olds. In nearly all countries, boys are more likely than girls to report drunkenness at all ages, and these differences increase with age. The U.S. is among the lowest third of countries for 15-year-olds, with 28 percent of girls and 34 percent of boys having been drunk at least twice.

What didn't we know?

While 11-year-old U.S. students experiment with smoking and alcohol in about the middle range among all countries, by age 15 our students are among the least likely to have ever experimented with smoking or to have ever had a drink of alcohol. At age 15 years, our students are among the least likely to smoke either weekly or daily - but are in the middle range for students who drink some type of alcohol at least weekly. At the same time, our students are less likely to drink beer than the students in most other countries - indicating that our students may be comparably more likely to drink other types of alcoholic beverages. Even though the total percentage of adolescents who report drinking alcohol at least once increases by age for all countries, about 80 percent of countries have higher percentages of youth who have drunk alcohol by ages 13 and 15 years than does the United States. The findings on trends in smoking and drinking by age are consistent with U.S. surveillance reports and underscore the fact that an increasing number of young people experiment with these illegal substances as they progress through adolescence.

The United States has three national data sets that provide surveillance and examine adolescent use of tobacco and alcohol.[13] Each is a cross-sectional study that takes place on a regular schedule for monitoring the frequency of health behaviors in the adolescent population. The Substance Abuse and Mental Health Services Administration's annual National Household Survey on Drug Abuse monitors the use of tobacco and alcohol among adolescents (aged 12 to 17) and adults. The University of Michigan's annual Monitoring the Future survey (funded by NIH) also tracks the prevalence of tobacco and alcohol use, as well as the use of illicit drugs, by 8th, 10th, and 12th graders.[14] The Centers for Disease Control's Youth Risk Behavior Surveillance System monitors tobacco and alcohol use among students in grades 9 through 12 every other year.[15]

Comparison of findings on smoking between the HBSC study and the YRBS show similarities, especially when the overall older ages of students participating in the YRBS are considered. The 2001 Youth Risk Behavior Surveillance System (YRBS) reports that 64 percent of high school students in grades 9 - 12 had ever tried cigarettes. Higher grade levels were associated with increased risk for ever trying smoking: 71 percent of students in grade 12, 66 percent of students in grade 11, and 58 percent of students in grade 9.[15]

Parental disapproval helps adolescents to resist smoking.[16] However, it is not clear the extent to which parents' own smoking behavior modifies this protective effect.[17] Like smoking among adolescents, adult smoking is generally more prevalent in Europe than in the U.S.: smoking rates in 1999-2001 ranged from 19 percent in Sweden to 42 percent in Hungary,[18] compared to 21 percent in the U.S.[19] Adolescent susceptibility to smoking has been found to be correlated with exposure to others'smoking (in the home or by friends), owning or willingness to own tobacco promotional items, having a favorite cigarette advertisement, skipping school and poor school performance, and lack of attendance in religious activities. Overall, 32 percent of non-smoking adolescents appear to be susceptibile, or amenable, to smoking. Of non-smoking adolescents, younger teens and females are more susceptible to smoking initiation.[20]

The 2001 National Household Survey on Drug Abuse and the 2002 Monitoring the Future report find that rates of youth smoking among 12- to 17-year-olds have declined over the past three years.[21] This decline can also be measured by the number of new youth who begin smoking on a daily basis, which has decreased from 3000 per day in 1997 to 2000 per day in the year 2000.[13] These three major U.S. sources of information on tobacco and alcohol use among U.S. adolescents also provide important information about disparities between racial and ethnic subgroups in the use of tobacco and alcohol. White adolescent use of tobacco generally exceeds that of either blacks or Hispanics, and past-month use of cigarettes is far more prevalent among American Indian/Alaska Native youth than among blacks, whites, or Hispanics.[22] The YRBS also found that 8 percent of students had recently used smokeless tobacco and 15 percent of students had recently smoked a cigar.[15] In addition, there appears to be significant geographic variation in adolescent smoking rates across the United States, similar to variation of smoking rates across countries. Alcohol use is generally found to be more prevalent among white and Hispanic youth than among blacks.

While HBSC students do not report higher associations of unhappiness or loneliness with frequent smoking, longitudinal studies do show emotional distress related to the onset of adolescent cigarette smoking. In addition, the longitudinal studies show that adolescents who smoke in the twelfth grade are more likely to experience emotional distress in young adulthood, even after controlling for family problems, rebelliousness and deviant behavior. These findings help to show that the relationship between tobacco use and emotional distress is dynamic.[23] It is possible that the younger adolescents sampled in the HBSC study had not yet experienced emotional turmoil, were not sensitive to it, or HBSC measures and analysis were not specific to this issue. Because of the strong relationships among cigarette smoking, drinking alcohol, use of illicit substances and conduct disorder among older adolescents, it is expected that these students may continue to experience emotional distress through adulthood as the multiple negative consequences from smoking and alcohol evolve.

The 2001 National Household Survey on Drug Abuse and the 2001 Youth Risk Behavior Survey of high school students show use of alcohol, heavy drinking and binge drinking increases with age. Although episodic heavy drinking, or binge drinking, varied across states, students in higher grades were more likely to report this behavior (37 percent of 12th graders) than were 9th graders (24.5 percent).[13] These findings demonstrate a likely extrapolation of the percentages of students reporting getting drunk as part of the HBSC study as they grow older.

Programs to prevent tobacco use and alcohol use by adolescents operate at the national, State, community, and school levels. National and State programs generally attempt to deter use through legislation and regulation. Important examples include increasing the price of tobacco and alcohol products through excise taxes, minimum age of purchase laws, and prohibiting manufacturers from marketing these products to youth. In 1998, a settlement agreement was signed between the Attorneys General of 46 states and five territories and the nation's leading cigarette manufacturers.[24] A major emphasis of the agreement is its provisions regarding the marketing of cigarettes and other tobacco products to youth and the prevention of tobacco use among youth.

By 1987, all 50 States and the District of Columbia had raised the legal age for purchasing alcohol to 21. This policy change has been shown to have been effective in reducing both youth drinking and traffic crashes,[26] and lowering the legal blood alcohol concentration for youth effectively decreases the proportion of fatal single-vehicle nighttime crashes.[27] Individual States and communities, as well as the Federal government, are supporting efforts both to enforce these laws as well as to educate youth about the risks associated with alcohol. One such effort is the Combating Underage Drinking program overseen by the Office of Juvenile Justice and Delinquency Prevention of the Department of Justice; this program provides funding to the States for projects aimed at prohibiting the use of alcohol by minors.[28] In addition to public-sector programs, private foundations are supporting this effort as well; for example, the Robert Wood Johnson Foundation recently funded coalitions in 10 states and two territories to seek policy solutions to reduce underage drinking in their communities.[29]

A synthesis of the evaluations of approaches to reduction of smoking and drinking has concluded that no single strategy is successful on its own, and multiple approaches have the greatest chance of success.[30] Programs designed to delay and prevent the onset of substance use, including the use of tobacco and alcohol, at the individual level are usually classroom-based. Acquiring new knowledge and skills is a normal function of school, and this setting permits consistent contact with children over the course of their development.[31] Two general approaches have been used: 1) the social influence model, which addresses drug-related expectancies (knowledge, attitudes and norms) and drug-related resistance skills; and 2) a model based on enhancing personal and social competence.

Although many individual studies based on the social influence model have demonstrated success, especially in the short term, more recent studies have shown that their effectiveness may have been overstated, especially over the long-term. Most recently, the Hutchinson Smoking Prevention Project, which is considered an extremely well-designed and - conducted study of the social influences approach to smoking prevention, found no evidence that this approach is effective in the long term deterrence of adolescent tobacco use, as measured among twelfth graders.[32]

The model based on enhancing personal and social competence includes elements of the social influences approach but also emphasizes information and skills designed to promote personal self-management and competence in social skills. Effective programs based on this model, such as Life Skills Training, specifically target tobacco, alcohol and marijuana use.[33] Multiple evaluation studies demonstrate that it cuts use of tobacco, alcohol and marijuana by 50 to 75 percent. In addition, long-term evaluation has shown that this program reduces pack-a-day smoking by 25 percent.

Another example of a program that uses this model is the Midwestern Prevention Project, a comprehensive, community-based, multi-faceted program for adolescent drug abuse prevention.[34] It focuses on students in middle schools and follows them through high school. The overall program is a coordinated system that includes a school program, a parent education and organization program, community organization and training, and local policies directed toward tobacco, alcohol and other drugs. The program helps adolescents to recognize the social pressures to use substances and provides training skills on avoiding both high-risk situations and substance use. Parent education, community organization and training, a mass media campaign, and local policy changes aimed at limiting minors' access to substances all bolster and support the student-centered curriculum. Evaluation of this program found reductions of up to 40 percent in daily smoking. By age 18, a 5 percent reduction in daily cigarette and a 7 percent reduction in monthly drunkenness remained, and by age 23, young adulthood, a 2 percent reduction in cigarette smoking persisted.

Promotion of youth development is a national movement that encourages programs to be based on a developmental framework that supports young people's acquisition of personal and social skills. Acquisition of personal and social skills help youth to mature into healthy, economically self-sufficient, and happy adults who practice good citizenship and to thrive during adolescence. Both the Life Skills Training Program and the Midwest Prevention Project are examples of programs that promote youth development. This strategy, as evaluation results continue to grow across multiple programs, is poised to become the cornerstone of youth programming.[33]

Multiple approaches are necessary to control tobacco and alcohol use; no single step appears effective by itself.[31] Community-based interventions directed at preventing tobacco and alcohol use by youth have had variable success. Policy-level interventions aimed at restricting substance use by youth, such as clean air laws, price increases through taxation, counter-advertising, and enforcement of existing laws restricting minors' purchase of tobacco and alcohol products, need to be combined for maximum effectiveness.

REFERENCES

1. Settertobulte W, Jensen B, Hurrelmann K. Drinking Among Young Europeans. Copenhagen: World Health Organization Office for Europe, 2001.

2. Centers for Disease Control and Prevention. National Tobacco Information Online System (NATIONS). (Available at http://apps.nccd.cdc.gov/nations; last accessed January 2002.)

3. McGinnis JM, Foege WH. Actual causes of death in the United States. JAMA 1993;270:2207-2212.

4. U.S. Department of Health and Human Services. Public Health Service. National Institutes of Health. National Institute on Alcohol Abuse and Alcoholism. Ninth Special Report to the U.S. Congress on Alcohol and Health, NIH Publication No. 97-4017, 1997.

5. Clark DB, Lynch KG, Donovan JE, Block GD. Health problems in adolescents with alcohol use disorders: Self-report, liver injury, and physical examination findings and correlates. Alcoholism:

Clinical and Experimental Research 2001;25(9):1350-9.

6. Dees WL, Srivastava VK, Hiney JK. Alcohol and female puberty; the role of intraovarian systems. Alcohol Research and Health 2001;25(4):271-5.

7. Hingson RW, Heeren T, Jamanka A, Howland J. Age of drinking onset and unintentional injury involvement after drinking. JAMA 2000;284:1527-1533.

8. Hingson R, Heeren T, Levenson S, Jamanka A, Voas R. Age of drinking onset, driving after drinking, and involvement in alcohol related motor vehicle crashes. Accid Anal Prev 2002;34:85-92.

9. Hingson R, Heeren T, Zakocs R. Age of drinking onset and involvement in physical fights after drinking. Pediatrics 2001;108:872-877.

10. Khuder SA, Dayal HH, Mutgi AB. Age at smoking onset and its effect on smoking cessation. Addict Behav 1999;24(5):673-7.

11. White HR, Pandina RJ, Chen PH. Developmental trajectories of cigarette use from early adolescence into young adulthood. Drug Alcohol Depend 2002;65(2):167-178.

12. Grant BF, Dawson DA. Age at onset of alcohol use and its association with DSM-IV alcohol dependence. Alcohol Health Res World 1997; 22:144-148.

13. Substance Abuse and Mental Health Services Administration. National Household Survey on Drug Abuse. Highlights, 2001. (Available at http://www.samhsa.gov/oas/nhsda/2k1nhsda/vol1/highlights.htm.)

14. Bachman JG, Johnston LD, O'Malley PM. Monitoring the Future: Questionnaire responses from the nation's high school seniors, 2000. Ann Arbor, MI: Institute for Social Research, 2001.

15. Youth Risk Behavior Surveillance - United States, 2001. MMWR June 21, 2002;51(SS04);1-64.

16. Sargent JD, Dalton M. Does parental disapproval of smoking prevent adolescents from becoming established smokers? Pediatrics 2001;108(6):1256-62.

17. Anderson MR, Leroux BG, Marek PM, Peterson AV, Kealey KA, Bricker J, Sarason IG. Mothers' attitudes and concerns about their children smoking: Do they influence kids? Prev Med 2002;34(2):198-206.

18. World Health Organization Regional Office for Europe. Smoking prevalence in adults. (Available at http://cisid.who.dk/tobacco; last accessed January 2003.)

19. National Center for Health Statistics. Health United States, 2002 with Chartbook on Trends in the Health of Americans. Hyattsville, MD: 2002.

20. Kaufman N, Castrucci BC, Mowery PD, Gerlach KK, Emont S, Orleans CT. Predictors of change on the smoking uptake continuum among adolescents. Arch Pediatr Adolesc Med 2002;156:581-587.

21. LD Johnston, PM O'Malley, JG Bachman. Teen smoking declines sharply in 2002, more than offsetting large increases in the early 1990s. Ann Arbor, MI: University of Michigan News and Information Services, December 16, 2002. (Available at www.monitoringthefuture.org; last accessed January 28, 2003.)

22. Substance Abuse and Mental Health Services Administration. Summary of Findings from the 2000 National Household Survey on Drug Abuse. Rockville, MD: Office of Applied Stud-

ies, NHSDA Series H-13, DHHS Publication No. (SMA) 01-3549, 2001.

23. Orlando M, Ellickson PL, Jinnett K. The temporal relationship between emotional distress and cigarette smoking during adolescence and young adulthood. J Consult Clin Psychol 2001;69(6):959-70.

24. National Association of Attorneys General. Master Settlement Agreement. 1998. (Posted at http://www.naag.org/upload/1032468605_cigmsa.pdf; last accessed November 2002.)

25. Campaign for Tobacco-Free Kids. Show Us the Money: a mid-year update on the states allocation of the tobacco settlement dollars. Campaign for Tobacco-Free Kids, July 2002.

26. Wagenaar AC, Perry CL. Community strategies for the reduction of youth drinking: Theory and application. J Res Adolesc 1994;319-345. (Communities Mobilizing for Change in Alcohol Project)

27. Hingson R, Heeren T, Winter M. Lower legal blood alcohol limits for young drivers. Publ Health Rep 1994;109(6):738-744.

28. Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice. Enforcing the Underage Drinking Laws Program: A Compendium of Resources. Washington, DC: U.S. Department of Justice, March 2001.

29. The Robert Wood Johnson Foundation. Call for Proposals: Reducing Underage Drinking Through Community and State Coalitions. Princeton, New Jersey: The Robert Wood Johnson Foundation, 1996.

30. Committee on Health and Behavior, Research, Practice and Policy, Board on Neuroscience and Behavioral Health, Institute of Medicine. Health and Behavior. The Interplay of Biological, Behavioral and Societal Influences. Washington, DC: National Academy Press, 2001.

31. Botvin GJ. Preventing drug abuse in schools: Social and competence enhancement approaches targeting individual-level etiologic factors. Addictive Behaviors 2000;25(6):887-897.

32. Peterson AV, Kealey KA, Mann SL, Marek, PM, Sarason IG. Hutchison smoking prevention project: Long-term randomized trial in school-based tobacco use prevention - results on smoking. J Natl Ca Inst 2000;92:1979-1991.

33. National Research Council and Institute for Medicine. Community Programs to Promote Youth Development. Committee on Community-Level Programs for Youth. J Eccles and JA Gootman, eds. Board on Children, Youth and Families, Division of Behavioral and Social Sciences and Education. Washington DC: National Academy Press, 2002.

34. Pentz MA, Mihalic SF, Grotpeter JK. Blueprints for Violence Prevention, Book One: The Midwestern Prevention Project. Boulder, CO: Center for the Study and Prevention of Violence, 1998.

CHAPTER SIX

VIOLENCE

VIOLENCE

International studies comparing death rates show that violence among U.S. youth is a much more severe problem than in other countries. A multi-year analysis limited to 26 industralized published in 1997 showed the U.S. child homicide rate (children and youth <15 years old) to be five times higher than the rate of all other countries combined.[1] The suicide rate was twice as high as the other countries combined. U.S. children and youth accounted for 86 percent of all firearm deaths occurring in all the countries. Of all firearm-related deaths of children under age 15, 55 percent were reported as homicides, 20 percent as suicides, 22 percent as unintentional, and 3 percent as of undetermined intent. In 1999, homicide and suicide were ranked second and third among causes of death of U.S. youth at ages comparable to those in the HBSC study, following only death rates for unintentional injury.[2]

Although the homicide rates among U.S. youth have decreased since the 1997 international study,[1] a more recent WHO report of all counties still finds higher rates of death from violence in the U.S. than in other industrialized countries.[3] The WHO comparisons for 2000 show that, apart from the U.S., where the youth and young adult homicide rate was 11 per 100,000, most countries with homicide rates above 10 per 100,000 are either developing countries or those experiencing rapid social and economic changes.[3] Countries with low rates tend to be in Western Europe; several have fewer than 20 homicides a year.

Suicide fatalities and associated morbidity are more difficult to quantify in existing data systems in the U.S. and other countries.[3] The WHO report comparison of youth suicides found the U.S. to have 241 suicides among 5- to 14-year-old males in 1998, for a death rate exceeded only by the Russian Federation, the Ukraine, Romania, Poland and the United Kingdom. The rate was lower for females at ages 5-14, as it is in most countries, but the U.S. rate is still among the highest. Data on injury from non-fatal violence are also difficult to obtain, either nationally or at an international level, although it is estimated that for every youth homicide there are approximately 20-40 victims of youth violence receiving hospital treatment.[3]

The high mortality rates from homicide and suicide among U.S. youth compared to other countries, including a number of shooting deaths in U.S. schools, raise serious concerns about related behaviors among our youth.[4,5] While encouraging declines in homicide and other violent crimes have been observed over the last decade, rates of aggravated assault and self-reports of non-lethal violence remain high. Aggressive violence by youth toward others in the U.S. is described in depth in the Surgeon General's Report on Youth Violence. For U.S. adolescent suicide behavior, the known etiology (associated primarily with depressive symptoms or anxiety), risk factors, and behavioral attributes are described in the Surgeon General's Report on Mental Health.[5] To understand youth violence within the context of health-related behavior, a useful definition of violence is: the threatened or actual use of physical force toward another person or group, or on oneself, encompassing acts that may be reactive or proactive, criminal or noncriminal, acts that can occur within the context of other problem behaviors, and acts that can result in lethal and nonlethal outcomes.[3,6]

The Surgeon General's Report on Youth Violence emphasized that there may be two general onset trajectories, or developmental pathways, for aggressive youth violence-an early one, in which violence begins before puberty, and a late one, in which violence begins in adolescence.[4] Most aggressive youth violence begins in adolescence and ends with the transition into adulthood.[3,4,7]

Youths who become violent very early generally commit more crimes, and more serious crimes, for a longer time. Risk and protective factors vary in predictive power depending on when during the course of development they occur. As children develop, some risk factors will become more important and others less important.

Risk factors associated with the potential for youth violence at the individual level include biological, psychological, and behavioral characteristics.[3] To varying degrees they may be influenced by family, peers and other social or cultural factors. During adolescence, violent behavior among youth may be one component of a syndrome that may include drugs, alcohol, precocious sex, and other problems.[7,8] Violence in the media is among cultural factors influencing youth, and there is evidence linking watching violence in television and movies as an adolescent and violent behavior as an adult.[3,9,10] While serious and lethal violence are extreme behaviors, other forms of aggression are recognized as part of the spectrum requiring intervention to prevent physical and psychological injury.[4,11]

Aggressive behavior may take many forms, ranging from that most likely to be lethal- shootings- to physical fights and bullying, which may be associated with both injury and serious psychological effects.[12] The 2001 CDC Youth Risk Behavior Survey (YRBS) of students in grades nine to twelve found that 29 percent of boys and 6 percent of girls reported carrying a weapon in the past 30 days; 43 percent of boys and 24 percent of girls were in at least one physical fight on school property in the past year; and 5 percent of males and 3 percent of females were injured in a physical fight.[1] Seven percent of high school students felt too unsafe to go to school on more than one of 30 days preceding the survey.

As the most common form of interpersonal violence in adolescence, physical fighting often precedes substance use and other problem behaviors.[2,3] The YRBS estimates that 50 percent of ninth grade males and 30 percent of females had one or more physical fights during the preceding year and rates decreased in each succeeding year as students grew older.[14] Little national prevalence information is available for fighting behavior in the younger years, but Nansel et al. find that according to U.S. HBSC data at grades six to ten, fighting behavior is strongly associated with bullying involvement, but less prevalent.[12]

The U.S. HBSC survey data were used to describe the prevalence and psychosocial adjustment of students who are bullies, bullied, or both a bully and a target of bullying.[12] Bullying behavior, as distinct from fighting, is defined by an implicit imbalance of power.[4] About 30 percent of U.S. students in grades six to ten report moderate or frequent (weekly) involvement in bullying, either at school or away. Thirteen percent report bullying others, 11 percent report being bullied, and 6 percent report both bullying and being bullied. Prevalence of bullying involvement is higher among sixth to eigth grade students than among ninth and 10th graders. Boys are more likely than girls to be both perpetrators and targets of bullying. Bullying may take both physical and psychological forms. Boys are more likely to be bullied physically while girls are more like to be recipients of rumors and sexual comments.

Other HBSC study countries asked only about bullying behavior at school, in contrast to the U.S., which asked multiple questions about bullying either at school or away. International HBSC data on bullying at school are shown at age 15 in this chartbook to be consistent; international comparisons at age 13, when bullying is more prevalent, are available elsewhere.[3,5] Attributes of 15-year-old students approaching physical maturity who bully may be different than in younger students for whom early pubertal influences and feelings of vulnerability are higher.[6]

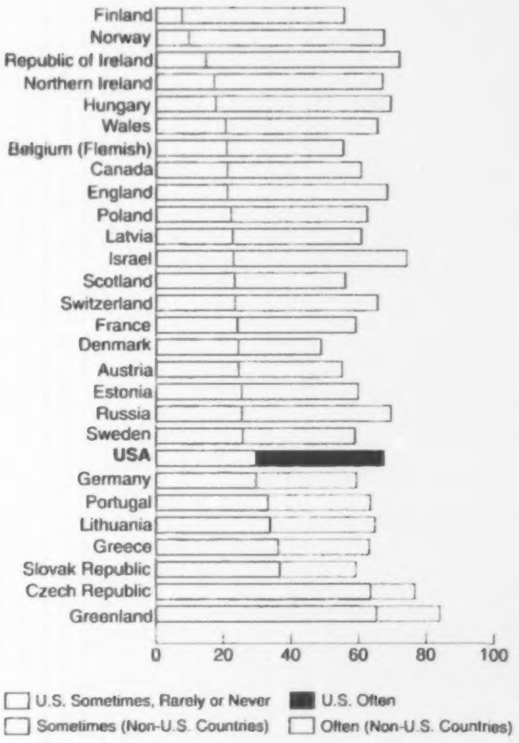
Only a few HBSC countries asked about weapon-carrying or fighting. The question on weapon-carrying defines weapons to include guns, knives, or clubs for self-defense because investigators in other countries determined that prevalence of carrying guns would be too low to provide statistically reliable estimates. The 2001 YRBS high school survey found that about one-third of U.S. high school students who report carrying a weapon were carrying a gun.[14] Recent school shooting incidents in the U.S. have heightened anxiety and concern about school safety among students, parents, schools, and communities.[6] Neither of the HBSC questions on weapons or fighting were limited to behavior only at school.

U.S. students rank eighth among countries for students who never or rarely feel safe. Only 38 percent of U.S. students always feel safe at school; 30 percent rarely or never feel safe, and a third sometimes or often feel safe. However, in only five countries did 50 percent or more of the students always feel safe at school. The majority of students across countries said they sometimes, rarely or never feel safe at school and an alarming two-thirds of students in Greenland and the Czech Republic report that they only sometimes, rarely, or never feel safe at school.

U.S. students rank about in the middle among students who are bullied sometimes, once a week, or more often combined. However, U.S. students rank in the top third (ninth) among countries for students who are bullied at least once a week or more often at 4.5 percent, following Lithuania, Germany, Greenland, Latvia, Estonia, and Switzerland. U.S. students are in the middle range for students who report being bullied only sometimes (22 percent). About three-fourths of U.S. 15-year-olds say they are not bul-

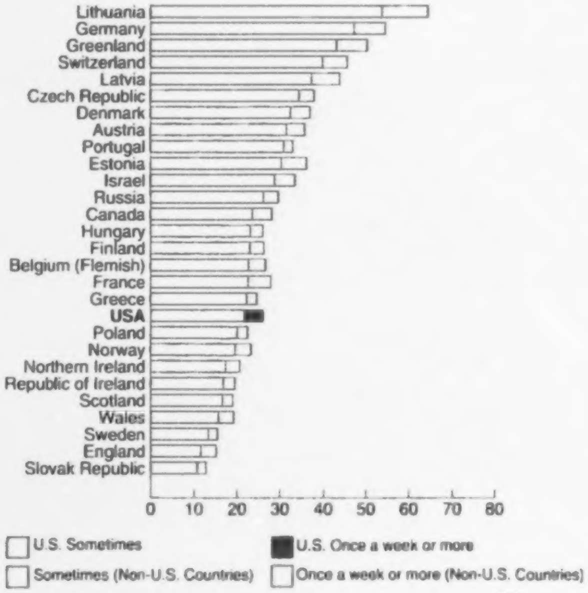
Do You Feel Safe At School?

Percent feeling safe often and sometimes, rarely, or never



How Often Have You Been Bullied In School This Term?

Percent bullied sometimes and once a week or more

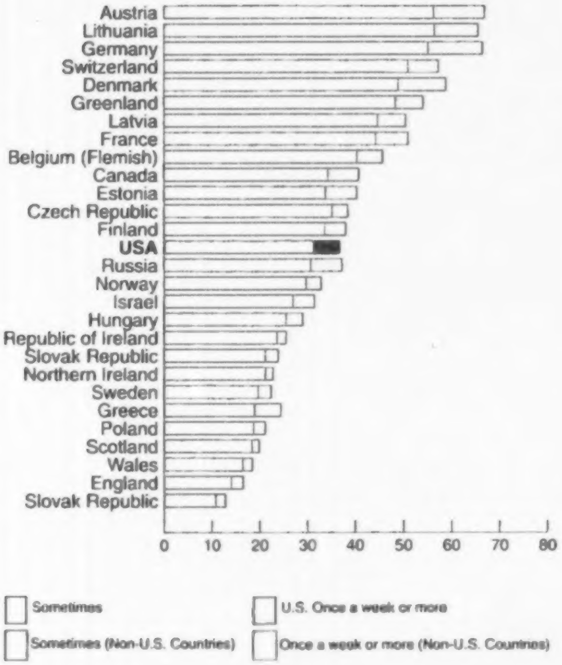


lied or were bullied only once or twice in the current school term. Students reported a wide variation in the proportion having been bullied sometimes (54 percent in Lithuania compared to 11 percent in the Slovak Republic) or at least once a week or more (11 percent in Lithuania compared to 2 percent in the Slovak Republic and Sweden).

The proportion of U.S. students who report bullying others once a week or more (5.5 percent) is similar to those who report being bullied, ranking among the top third of countries. However, 31 percent bully others sometimes, significantly more than U.S. students who report being bullied, but in the middle ranking of students from other countries. Half or more of the students in Austria, Germany, Lithuania and Switzerland report bullying others sometimes during the previous school term.

How Often Have You Taken Part In Bullying Other Students In School This Term?

Percent bullying others sometimes and once a week or more

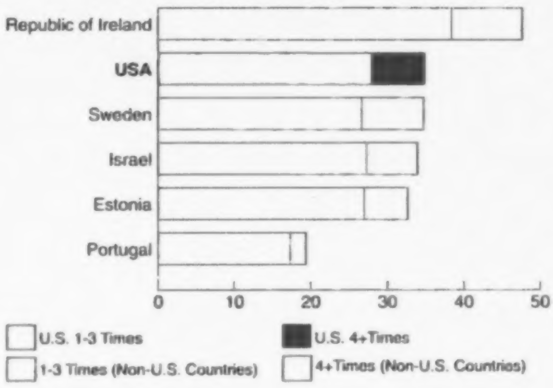


As described for U.S. students above, the prevalence of bullying behavior in all countries is higher among younger students than in 15-year-olds.[12] At age thirteen, when bullying behavior is more common, U.S. students ranked seventh among all countries for bullying others at least once a week (data not shown).[3]

Only six countries queried students about fighting behavior: U.S., Sweden, Republic of Ireland, Portugal, Israel, and Estonia. U.S. students rank in the middle of these countries, with 27.9 percent having been in one to three fights and 7.0 percent in four or more fights. While the majority of students in six countries had not been in a physical fight during the past 12 months, approximately 40 percent had been in one or more fights. Students in the Republic of Ireland were most likely to have fought, with 38.4 percent having been in 1-3 fights and 9.3 percent in 4 or more fights.

During The Past 12 Months, How Many Times Were You In A Physical Fight? (%)

Percent fighting once or more

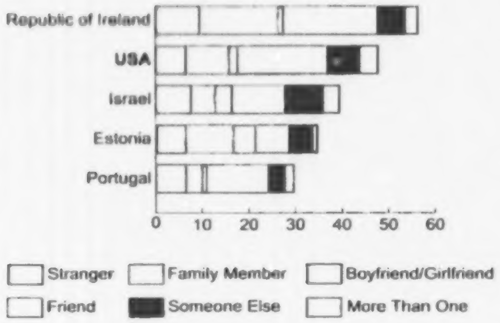


Across countries, students who had been in a physical fight report they most often fought with someone known to the student, such as a friend, family member, or boyfriend/girlfriend, rather than a stranger. The highest proportions of fights are with a friend, followed by family members.

Fighting with acquaintances or someone else they knew is also common, as is fighting with people across these relationship categories.

The Last Time You Were In A Physical Fight, With Whom Did You Fight?

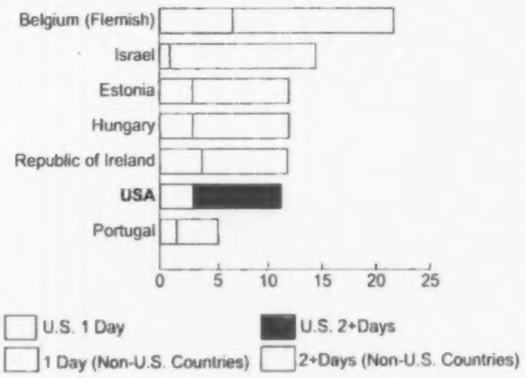
Percent fighting with boyfriend/girlfriend, stranger, friend, family member, someone else, or more than one of these people



Only Flemish Belgium, Estonia, Hungary, Israel, Portugal, Republic of Ireland, and the U.S. asked about weapon-carrying. Three percent of U.S. students report carrying a weapon for self-defense once during the past month, while 8 percent had carried a weapon on two or more days. Though approximately 85 percent of students in seven countries had not carried a weapon in the past 30 days, a small proportion had carried a gun, knife, or club for self-defense, in most cases on more than one occasion. Students in Flemish Belgium and Israel appeared particularly concerned with personal safety: 15 percent and 13 percent, respectively, had carried a weapon on two or more days.

During The Past 30 Days, On How Many Days Did You Carry A Weapon, Such As A Knife Or Club For Self Defense?

Percent carrying a weapon on one or more days



What didn't we know?

Overall, U.S. youth are no more likely to be involved in bullying others at school than students in many other European countries and Canada. However, U.S. students are among the higher ranking countries for frequent bullying (at least once a week) and, similarly, U.S. youth rank among the top third of all countries for being bullied frequently. In 1997-98, before the more recent deadly school shootings, U.S. youth were also among the top third of countries for rarely or never feeling safe at school. Among the few countries asking about fighting or weapon-carrying (gun, knife or club) for self-protection, U.S. students are no more likely to fight or carry weapons, but they are just as likely to fight with friends, family members or acquaintances, rather than with strangers.

The 2001 YRBS provides national prevalence estimates of fighting, bullying, weapon-carrying and feeling safe at school for grades nine to twelve, but it doesn't include data on younger students, among whom bullying and fighting are more common, nor does it place this behavior in the context of student relations with family, peers, and school.[14] Violent behavior is monitored by the YRBS in the U.S. partly because of our concern about our high homicide and suicide rates when compared to other industrialized countries.[1] These results from the international HBSC study show that our students are not the most violent nor most likely to be bullied, but we lead the world in rates of homicide and youth suicide, due to the greater lethality of the weapons used by students in the U.S. compared to other countries.

An analysis of homicides perpetrated by U.S. juveniles between 1981 and 1997 found that the rate of nongun-related homicides remained constant and that all of the increase was from gun-related incidents, indicating that the nature of youth violence had changed over this 25-year period.[7] The relatively high U.S. ranking of frequent (> once a week) bullying or being bullied, but not in infrequent involvement in bullying, suggests differences in associated patterns of weapon-carrying. Analysis of the U.S. HBSC data on students involved in bullying shows strong associations with violent behavior, including weapon-carrying and frequent fighting (>4 physical fights in the previous year).[8] Students involved in frequent bullying (as either the bully or the victim) were more likely than other students to report carrying a weapon for protection either at school or away. The likelihood of weapon-carrying was particularly high when students either bullied others or were bullied away from school grounds. Bullies (including bullies who are also bullying victims) were most likely to carry weapons for self-defense.

The HBSC survey was performed before the heightened alarm from the 1999 Columbine[9] and later school shootings, but U.S. students at ages 11-15 years in the HBSC still ranked among the highest third of countries in feeling unsafe at school. According to two studies of school shootings after the 1999 Columbine incident, perpetrators were likely to have felt bullied, persecuted or injured by others prior to the attack, with some of the abuse being long-standing and severe; many of them were likely to have expressed suicidal thoughts, plans or actual attempts before the event.[10,11]

As noted in the study on psychosocial correlates of bullying by Nansel et al., using U.S. HBSC data, bullies are more likely to find it easy to make friends while those who are bullied report more difficulty making friends, have poorer relationships with classmates, and feel more lonely.[12] Individuals who are both a bully and a victim of bullying report poorer relationships with classmates and increased loneliness although they do not report difficulty in making friends. Comparisons showing that U.S. students are among the least likely to feel that other students are supportive is suggestive of alienation in the school environment related to friendship networks and groups who form for a sense of identity and protection.

Students may select friends who share their values and attributes, including delinquency or a perceived need for protection. Students may also loosely refer to others' friendship networks as gangs, attributing to them behaviors different from their own. 'Street' gangs may be more likely to be identified with violence, but a 1998 report from the U.S. Departments of Education and Justice on student perceptions of gangs they see at their schools found that about one-third of U.S. students at ages 12 to 19 identified either members of their own school or outsiders 'coming around' their school as 'street' gangs.[12] Street gang presence as either students or 'outsiders' was estimated to occur in 37 percent of middle and high schools. Surveyed students identified 'street' gangs by various attributes such as having a name, spending time together, or wearing identifying clothing. Hispanic students were more likely to report the presence of gangs in their schools (61 percent), compared with 44 percent of black students and 33 percent of white students. Only 50 percent of students included commission of violent acts as one way of identifying 'street' gangs. This indicates that students often, but not always, associate the groups they call 'gangs' with violent acts and the study finds that street gangs may be involved in relatively small amounts of violence compared to overall criminal activity.

The HBSC data do not allow in-depth assessment of friendship networks as does the AddHealth study. Research from the longitudinal AddHealth study addresses the multifaceted nature of friendship networks, including their association with peer delinquency, an adolescent's own delinquent involvement, and feelings of isolation or exclusion.[13] The density of the peer network and an adolescent's own centrality and popularity in the network may indicate the degree of identity and belonging that the group provides. Group membership may be fluid, changing over the school year. The AddHealth study also finds that while a student might claim to be part of a friendship network, other students in that network may not identify the student as a member. Findings from the HBSC and other studies indicate that many students, particularly females, feel bullied through exclusionary tactics, belittling, or being subjects of rumors, sexual or other teasing.[12] Males are bullied more often and more likely to be hit, slapped or pushed.

As with aggressive violence and homicide, suicide rates tend to be higher for males than females and are associated with cultural and racial/ethnic factors both in the U.S. and in other countries.[3,5] Not only may adolescents who are recipients of bullying or anti-social behavior be more likely to be vulnerable to depression and isolation associated with suicidal behavior, but they may be more likely to exhibit 'acting-out' - such as truancy from school, declining school grades, substance abuse, or violence.[3,5]

The higher proportion of males involved in physical bullying is consistent with the higher prevalence of physical fighting among males than females. This is demonstrated in an analysis of U.S. HBSC data by Nansel et al. correlating frequent bullying, fighting and weapon-carrying.[21] Students report the highest proportion of fights as occurring among friends and family, followed by fights with other acquaintances. This fighting behavior is consistent with the relative lack of supportive peer and family relationships addressed in earlier chapters and with follow-up community studies reported for U.S. youth and in other countries.[3] The international WHO report on youth violence suggests that the basic need to belong to a group and create a self-identity is also an underlying feature of 'gangs' worldwide, whose composition range from mainly social groupings to organized criminal networks.[3]

Distinguishing between troublesome groups of youths and gangs involved in criminal behavior is critical to understanding youth violence. Gangs involved in criminal activity defined by distribution of illicit drugs, violence and/or robbery and weapon-carrying may be a contributing factor in the higher homicide rates in the U.S. than in other countries. An overview of youth gangs by the U.S. Office of Juvenile Justice and Delinquency Prevention notes 'street' gangs are more likely to recruit adolescents who own firearms, and gang members are more than twice as likely as non-members to own a gun for protection, more likely to have peers who own guns for protection, and more likely to carry their guns outside the home.[14] However, the overview notes that violence is a rare occurrence in proportion to all gang activities and most gang violence occurs between gangs, rather than against outsiders. The overview and the 2002 WHO report cite follow-up studies related to gang activity and summarizes risk factors during early adolescence that may predict later gang membership: "youth who grow up in more disorganized neighborhoods; who come from impoverished, distressed families; who do poorly in school and have low attachment to school and teachers; who associate with delinquent peers; and engage in various forms of problem behaviors."[3,27]

The studies cited above measured risk factors based on community, family, school, peer group and individual attributes. Chapters 3 and 4 of this report discussed HBSC findings that show comparatively high proportions of U.S. students struggling with family and peer relations and feeling that they are not in a supportive school environment. These findings are related to the development of networks and resources that can lead to or prevent violence. For example, the finding that a high proportion of U.S. students find other students not kind or helpful is pertinent to the establishment of positive, pro-social friendship networks and anti-social and gang behavior both at school and away. The early role of the family has also been stressed before, including the influence of the home environment on outcomes associated with violence. Adolescents with easy access to guns, alcohol, tobacco, and illicit substances have an increased risk of suicide, involvement in interpersonal violence and substance use.[26] One nationally representative study of girls at grades 5 through 12 who were physically or sexually abused in early childhood finds this abuse predicts such adolescent outcomes as severe depressive symptoms, increased reporting of life stress symptoms, substance abuse, and fair to poor health status.[15] These health symptoms and behaviors are also reported in relative high proportions among U.S. youth compared to other HBSC countries, suggesting that the effects of violence on youth health and behavior should be investigated more thoroughly.

Other studies on youth violence stress the importance of early family influences, particularly as they shape developmental pathways and violence trajectories.[5,7] This research shows that children learn from the kind of environment that adults or other caretakers unconsciously create in the family. Family environments that include harsh discipline, child maltreatment, spousal/partner violence, and a climate of conflict and hostility place children at increased risk for later violence. Children who have been physically abused at home are more likely to exhibit aggression in school and in the community and to engage in serious violent behavior as adolescents. Studies tracking the developmental pathways of violent behavior and the context in which the behavior occurs demonstrate the complex nature of biological, psychosocial and environmental factors through transitions from early childhood to adolescence.[7]

Previous sections of this report suggest that U.S. cultural, social, and structural trends increase the difficulty of providing families and students with supportive environments that reduce violence. Family structure in the U.S., with higher proportions of single-parent and step-families, may provide more stressors and make it more difficult for families to access school and community resources. Schools and communities may be particularly challenged with more racial and ethnic diversity than most of the other countries included in the HBSC study and by the challenges inherent in the 50 percent increase in the population of children of immigrants during the 1990's.[16] Yu, et al's analysis indicates that U.S. adolescents raised in non-English speaking homes are particularly vulnerable to behaviors associated with violence.[17] In these analyses, these students are more likely to have difficulty making new friends, be involved in bullying (either as a victim, a bully, or both), not feel accepted by other students, not feel as though they belong at school, and have difficulty talking to either parent about things that bothered them. They feel that their parents ae less supportive and less willing to help with school problems or talk with teachers. Some of the associations of school environment with overall health and well-being, fitness, family and peer relations, substance use and violence demonstrated from the HBSC and other studies should be examined further in special populations.

The school environment, particularly lack of connectedness, and feelings of non-support from other students, teachers, and parents is highly associated with alienation and participation in violence towards the self or others.[18,19] The HBSC's measures of student perceptions of the school environment have been studied extensively by researchers in other countries, partly due to concerns with effects of bullying and alienation of students both at school and in the community.[20] Since relatively high proportions of U.S. students appear to struggle with real and perceived violence, these data suggest the need to investigate both the social and structural aspects of school and community life in the U.S. that detract from the creation of supportive school and family environments.

REFERENCES

1. Centers for Disease Control and Prevention. Rates of homicide, suicide and firearm-related deaths among children-26 industrialized countries. Morbidity and Mortality Weekly Report 1997;46:101-105.

2. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). (Available at http://www.cdc.gov/ncipc/wisqars; last accessed July 6, 2002.)

3. World Report on Violence and Health. Geneva, Switzerland: World Health Organization, 2002. (Available at: http://www.who.int/violence_injury_prevention. last accessed October 3, 2002.)

4. U.S. Department of Health and Human Services. Youth violence: A report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, 2001.

5. U.S. Department of Health and Human Services. Mental health: A report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, 1999.

6. Dahlberg LL, Potter LB. Youth violence: Developmental pathways and prevention challenges. Am J Prev Med 2001;20(1S):3-14.

7. Huizinga D, Jakob-Chien C. The contemporaneous co-occurrence of serious and violent juvenile offending and other problem behavior. In: Loebger R, Farrington DP, eds. Serious & violent juvenile offenders: Risk factors and successful interventions. Thousand Oaks, CA: Sage Publications, Inc., 1998;pages 47-67.

8. Durant RH, Kahn J, Beckford PH, Woods ER. The association of weapon-carrying and fighting on school property and other health risk and problem behaviors among high school students. Arch Pediatr Adolesc Med 1997;151:360-366.

9. American Academy of Pediatrics, American Academy of Child and Adolescent Psychiatry, American Psychological Association, American Medical Association. Joint Statement on Impact of Entertainment Violence on Children. Washington, DC: Congressional Public Health Summit, July 26, 2000.

10. Johnson JG, Cohen P, Smailes EM, Kasen S, Brook JS. Television viewing and aggressive behavior during adolescence and adulthood. Science 2002;295:2377-2379.

11. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton BG. Bullying behaviors among the U.S. youth: Prevalence and association with psychosocial adjustment. JAMA 2001;285(16):2094-2100.

12. Centers for Disease Control and Prevention. Youth risk behavior surveillance - United States, 2001. Morbidity & Mortality Weekly Report

2002;51(SS04):1-64. Available at http://virlib.ncjrs.org. (Last accessed on September 30, 2002).

13. Dishion TJ, Loeber R. Adolescent marijuana and alcohol use: The role of parents and peers revisited. American Journal of Drug and Alcohol Abuse 1985;11:11-25.

14. Centers for Disease Control and Prevention. Physical fighting among high school students - United States, 1990. Morbidity and Mortality Weekly Report 1992;41:91-94.

15. Olweus D. The nature of school bullying: A cross-national perspective. London: Routledge, 1999.

16. Overpeck MD. International Perspectives on Youth Violence. DataSpeak, June 26, 2001. (Archived at: http://www.uic.edu/sph/dataspeak.)

17. Millstein SG, Halpern-Felsher BL. Perceptions of risk and vulnerability. In: Adolescent Risk and Vulnerability: Concepts and Measurement. Washington, DC: National Research Council and Institute of Medicine, 2001;pages 15-49.

18. Snyder HN, Sickmund M. Juvenile offenders and victims: 1999 National report. Washington, DC: Office of Juvenile Justice and Delinquency Prevention, National Center for Juvenile Justice, 1999. (Available at http://virlib.ncjrs.org.; last accessed September 2002.)

19. Nansel TR, Overpeck MD, Ruan WJ, Haynie DL, Scheidt PC. Relationships between bullying and violence among US youth. Arch Pediatr Adolesc Med (in press).

20. Brener ND, Simon TR, Anderson M, Barrios LC, Small ML. Effect of the incident at Columbine on students violence- and suicide-related behaviors. Am J Prev Med 2002;22:146-50.

21. Vossekuil B, Fein R, Reddy M, Borum R, Modzeleski W. Final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States. Washington, DC: U.S. Department of Education Office of Safe and Drug-Free Schools Program and U.S. Secret Service National Threat Assessment Center, 2002;pages 12-16.

22. Anderson M, Kaufman J, Simon TR, et al. and the School-Associated Violent Deaths Study Group. School-associated violent deaths in the United States, 1994-1999. JAMA 2001;286:2695-2702.

23. Howell JC, Lynch JP. Youth gangs in schools. Washington, DC: Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention. Juvenile Justice Bulletin, August 2000.

24. Haynie DL. Delinquent peers revisited: Does network structure matter? American Journal of Sociology 2001;106:1013-57.

25. Howell JC. Youth gangs: An overview. Washington, CD: Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention. Juvenile Justice Bulletin, August 1998. (Available at http://virlib.ncjrs.org.; last accessed September 2002).

26. Diaz A, Simantov E, Rickert VI. Effect of abuse on health: Results of a national survey. Arch Pediatr Adolesc Med 2002;156:811-817.

27. Hernandez DJ, Charney E. (eds.) From Generation to Generation: the health and well-being of children in immigrant families. Washington, DC: National Academy Press, 1998.

28. Yu SM, Huang ZJ, Schwalberg R, Overpeck MD, Kogan MD. Association of language spoken at home with health and school issues among US Asian adolescents. J School Health 2002;72:192-198.

29. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997;278:823-832.

30. McNeely CA, Nonnemaker JM, Blum RW. Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. Journal of School Health 2002;72:138-146.

31. Samdal O, Dur W. The school environment and health of adolescents. In: Currie C, Hurrelman K, Settertobulte W, Smith R, Todd J, Health and Health Behaviour among Young People. WHO Policy Series: Health Policy for Children and Adolescents Issue 1. Copenhagen, Denmark: World Health Organization Regional Office for Europe, 2000.

WHAT WAS LEFT OUT?

WHAT WAS LEFT OUT?

This chartbook highlights and discusses only those health measures that show important differences for U.S. students in comparison to other students in the HBSC countries as described in an international report for the 1997/98 survey. The full international report includes many measures where U.S. students were not different, but which revealed attributes of adolescent health that are common to all countries.

The HBSC international report includes topics selected primarily from the mandatory questions required for all participating HBSC countries or regions. Due to space limitations and complexity, U.S. chartbook comparisons are shown only for 15-year-old students even though the larger international report and additional HBSC study data also include 11- and 13-year-olds. When comparative rankings or analyses of HBSC data indicate that the international comparisons for younger students are different from those for 15-year-olds, the age-related issues are discussed here. However, it is important to note that a cross-sectional school-based study, such as the HBSC, reflects student status at only one point in time. Many researchers have shown that student health and related behaviors must be considered within a developmental context, consistent with the goal of the HBSC study. While the HBSC study includes young teens from ages 11 to 15 to incorporate these developmental stages, it cannot take the place of analysis based on longitudinal follow-up of individual students to document determinants of health and related behaviors over time. Where nationally representative research from longitudinal studies or from validated studies of U.S. youth are available, those findings have been addressed in discussing the background issues on each topic.

Not all mandatory questions were included in the international report or this U.S. comparison. Other optional standardized questions were asked by fewer countries for topics they considered important enough to include for the limited class time available to complete a survey. If space is available, a country might include questions asked by no other countries, but these questions do not allow comparisons to be made. The following include some important health-related areas that are covered by fewer countries or left out entirely:

- Injuries: Injuries represent the leading cause of death for U.S. adolescents, including causes such as motor vehicle crashes, homicide, and suicide.[1] The latter are covered in the section on violence. Other U.S. studies have shown an association between alcohol use in adolescence with non-fatal injuries or traumatic fatalities.[1,2] In addition, injuries to youth while involved in sports or recreation represent about half of all medically attended nonfatal injuries among U.S. youth.[3,4] A separate analysis completed for the 12 HBSC countries which asked about medically-attended injuries found that students reporting multiple high-risk behaviors are also more likely to be injured.[5] In each country, a strong increasing gradient in predicted risk for injury is observed as the number of reported health risk behaviors increases. Risk behaviors included nonuse of seat belts, bullying, excess time spent with friends after school, alienation at school and from parents, truancy, smoking, drinking, and an unusually poor diet.

- Use of illegal drugs: The sale of alcohol and cigarettes to youth is illegal in the U.S. and most other HBSC countries and have been addressed in this report. Use and sale of other substances such as marijuana, cocaine, amphetamines, steroids, etc., are also of major concern due to their direct health effects and their association with other health-related behaviors. While some HBSC countries asked questions about use of these illegal drugs, the question formats were not standardized across countries to allow international comparisons.

- Sexual activity: A few countries also included questions about sexual behavior due to its importance for teenage pregnancy and sexually transmitted diseases (STDs), which may have both short- and long-term adverse effects. The U.S. survey did not include these questions. A chapter of the international report included analysis of the HBSC country reports of sexual activity at age 15 years, including comparison with the results of similar questions asked in the 1997 U.S. Youth Risk Behavior Study (YRBS) of high school students.[6] Males are generally more likely than females to report having had sexual intercourse. In five of the nine counties included, the proportions range from 30 percent to 47 percent of males and 11 percent to 34 percent of females.

However, almost no gender differences are found in the U.S., Scotland, and Northern Ireland (at about 38 percent, 35 percent, and 28 percent respectively). The proportions of sexually active youth who use condoms ranged from 63 percent to 87 percent for males and 55 percent to 86 percent for females. Comparative U.S. values reported in the YRBS are 66 percent and 67 percent respectively.

- Family affluence: One chapter of the international report described results for 11 countries from a series to questions to teens on their families' relative affluence as associated with health, well-being, symptoms and behaviors. Since teenagers generally do not know the income of their parents, a number of other questions have been tested in the study to assess such relationships with health disparities previously demonstrated in a number of country-specific studies using adult respondents. A family affluence scale (measuring material wealth) included items such as car ownership, having one's own bedroom, and traveling for vacations with family. In addition, students were asked to rate how well off they considered their families to be. Students in Hungary, Latvia, and Russia are far less likely than students in the other countries to report high family affluence based on cars, bedrooms, and vacation trips. Students in Germany and the U.S. have the largest proportions of students perceiving their families to be very well off. At the same time, the highest proportion of students believing their families not to be well off is also greatest in the U.S.

Analysis of the eleven countries combined shows that increased perception of family affluence is consistently and positively associated with such positive health behaviors as exercising and eating more fruit. At the same time, health-compromising behaviors, such as smoking and being drunk, either display no relationship or have a heightened association with affluence. Since the analysis combines the 11 countries, including the U.S., this counter trend to usual U.S. findings on socioeconomic status and smoking behavior among both U.S. youth and adults may be because heavy smoking rates among the other ten countries probably carried the heaviest weight in the findings. As noted in the chapter on smoking, U.S. youth are among the least likely to smoke among all HBSC countries.

Among indicators of well-being in the 11 country analysis, perceived health, happiness with life, and self-confidence are related to increased family affluence in seven to eight of the countries, while a greater incidence of daily symptoms and feelings of helplessness are associated with lower family affluence in about half of the countries. Perceived family wealth shows a pattern similar to that for the affluence scale but with a far more consistent association with both the positive and negative health behaviors and feelings of health and well-being.

One HBSC question asked about parental occupations, a question often used in European adult studies to reflect social class or affluence. It was not used in the chartbook because many students don't know what their parents do at work. Also, social class in the U.S. may be less likely to reflect affluence or a sense of social position than does income when compared to more traditional social class measures in many European countries. Besides the mandatory questions on affluence, the U.S. included questions on the highest educational level attained by parents. Comparisons could not be made to other countries on this variable, however. Regardless of how socioeconomic status is measured in the HBSC, these limited results indicate that health behavior and well-being indicators vary with affluence in the expected directions among all the countries analyzed - except for smoking in Europe and drinking in all countries. Clearly, smoking and drinking are influenced more strongly by other factors such as peer group, culture, media, or parental modeling. Still, this limited HBSC analysis appears to indicate that greater wealth is generally associated with positive health attributes in all of the countries.

U.S. specific items:

Race/ethnicity, immigration, and acculturation: Only the U.S. questionnaire addressed racial and ethnic status, immigration, and acculturation (as measured by primary language spoken in the home and place of birth). The U.S. questionnaire includes the same questions as used in the 2000 Census to allow national estimates for African-American and Hispanic students oversampled in the HBSC with large enough numbers to perform analyses for these and other groups, such as Asian-Americans. Other U.S. surveys of adolescents of other ages and vital records show differences in health-related attributes, behaviors, and outcomes by race and ethnicity.[7] However, one contextual analysis from the Add Health study which controls for race/ethnicity, family structure, gender, and income indicates that these factors explain no more than 10 percent of the variance in predictions of smoking, alcohol use, involvement with violence, suicidal thoughts or attempts, and sexual intercourse.[9] Another AddHealth study finds that parental supportiveness and expectations are more positively associated with adolescent health behavior.[10] Future studies of interactions of race/ethnicity with supportive networks in the U.S. HBSC may provide further evidence for understanding disparities in health in order to provide effective services.

Similar supportive network concerns are critical for providing appropriate health services to our large immigrant populations. As noted in topical chapters, historical immigration patterns in the U.S. are quite different from those in most European countries. There is little research on health effects of acculturation among immigrant youth,[11] although one AddHealth study shows immigrant children born in other countries generally have significantly fewer physical health problems and risky behaviors than either native born children of immigrants or non-Hispanic white youth.[12] A contextual analysis of acculturation in the U.S. HBSC data offers new insights on health-related influences[13] for adolescents who usually speak another language at home. They face a greater risk for poor health factors, psychosocial and school risk factors, and less parent support, regardless of race or ethnicity.

Adolescents in the workforce: Only the U.S. survey included a question about work, allowing no international comparisons. Work-related injuries and deaths are not uncommon for youth working both legally and illegally.[14,15] The injuries and deaths often occur in jobs declared to be hazardous, or typically prohibited for 14- and 15-year-olds, under Federal child labor laws. Research on job safety among youth has been reviewed by the National Academy of Sciences Committee on the Health and Safety Implications of Child Labor.[16] Long work hours during the school year are associated with problem behaviors, including substance abuse and minor deviance, and with insufficient sleep and exercise. The intensity of work during the school year may affect academic performance and social development, together with the possibility that young students who work 'off the books', avoiding labor regulations or payment of required taxes, may be exposed to more dangerous or inappropriate working conditions. At the same time, working may provide many young people with valuable lessons about responsibility, punctuality, dealing with people and money management, while increasing their self-esteem and helping them become independent and skilled.

The U.S. Labor Department estimates that 57 percent of 14-year-olds and 64 percent of 15-year-olds worked for pay in 1994-97 at some time during the year, either during the school year, in the summer or both.[17] These estimates are based on self-reports in the National Longitudinal Survey of Youth 1997 (NLSY97) and are higher than time worked by young teens as reported by parents in the Current Population Survey. Youth younger than 16 may work legally under special regulations to guard their health or safety but many work in casual employment arrangements (freelance). Legally, children of any age may work in family-owned businesses and on family farms. Casual (freelance) arrangements are more likely for those age 14, while at age 15, the youth are more likely to have ongoing formal employment arrangements. Work is very common during the school year and the majority of youths with employee jobs work during both the school year and summer. At ages 14 and 15, youths are most frequently employed in the retail trade and services industries.

Using somewhat different definitions of work, an AddHealth analysis finds that 40 percent of 7th and 8th graders were employed during the school year.[10] This analysis found that young adolescents who work may be more likely to be injured and are more likely to use tobacco and alcohol than students who don't. The report by the National Academy of Sciences Committee on the Health and Safety Implications of Child Labor recommends review of what circumstances cause working to be detrimental, what can be done to avoid those circumstances, and how working can be made more beneficial.

Other items: The HBSC study asked about time spent watching TV or playing computer games. The survey didn't include questions about time spent on the Internet at home that may include school-related activities or recreational pursuits. U.S. students may have different levels of access to the Internet than do students in Europe due to the cost of non-mobile phone time, indicating possibly different influences among U.S. and European students. There may be a trade-off between using the Internet at home and time spent on after-school activities or other pursuits.

U.S. students are also more likely to require extensive time in transportation to and from school than students in Europe. The current HBSC study does not include a complete overview of time spent with TV, internet, after school activities, athletic or recreational activities, or with friends. The study asked about time spent exercising but didn't ask about time spent walking or biking as part of daily activities, such as going to school or working around the home and elsewhere. In many European countries, cars are much less likely to be used as part of daily transportation than in the U.S. Increasing trends toward overweight and preliminary analysis of comparable overweight patterns among 15 of the HBSC countries indicate that daily activities of U.S. youth may not encourage expenditure of physical energy.[18]

Bias

Several limitations to the HBSC survey data should be noted. First, because the survey was conducted in schools, the study population excludes such high-risk populations as teens who have dropped out of school or who are in the juvenile justice system. Students in special education classes were also less likely to be interviewed. Students with language difficulties or learning disabilities may have been less likely to complete the questionnaires. Students who were absent on the day of the survey may be more likely to have chronic illnesses or have higher risks associated with truancy and related factors assessed here. Students in alternative schools are not included in the sample and have been shown to have higher levels of health-related risk behaviors than high school students surveyed in the YRBS.[19] Thus, the levels of risk reported here may be lower than those of the adolescent population as a whole. Assessment of effects of absenteeism on adolescent reports of health-behaviors in the U.S. have not shown it to be a problem.[20] The costs of follow-up on students absent during the survey are extensive. School administrators were not asked for demographic profiles or reasons for absences of students in the HBSC sample, similar to practices in most other school-based surveys, so that analysis of differences among students present to complete the survey and those absent cannot be performed.

U.S. prevalence estimates based on adolescent reports in school-based anonymous settings compared to parent reports in household surveys show higher risk levels on most health-related behaviors when teens report for themselves.[21] On similar health measures and risk behaviors such as unintentional injuries, violence, tobacco use, alcohol and other drug use, sexual behaviors, dietary behaviors and physical activity, almost all of those reported by students in the school-based study produce estimates indicating higher risk than in the parental reports. Parents may be less aware of some teen health symptoms such as headaches, feeling low, and feeling tired, resulting in lower estimates from parental reports than from direct reports from teens. However, we know very little about the way that adolescents conceptualize their health and whether their conceptualization parallels that of adults. Adolescent assessment of whether or not they feel healthy may also change over time in a development sequence. We do not know whether those who rate themselves as healthy tend to maintain that self-image, or whether the self-image varies over time, in a manner similar to adults, as they begin to experience a greater number of symptoms. This may be an important research question for assessing the functional health status of our teens.

In addition to potential bias issues, research is needed on how well teens report on health symptoms and behaviors. Besides the AddHealth study, the YRBS and Monitoring the Future, most U.S. national measures on teen health and related behaviors are based on parental reports.[22] As youth move through natural developmental processes with increasing age, they usually become more independent of their families with the potential for less parental knowledge of youth symptoms and behaviors. Yet, little testing has been done to contrast measures reported by parents compared to reporting by the teens themselves. Analysis of student reporting taken on two time points for the YRBS indicates that students tend to report health risk behaviors reliably over time.[23] The prevalence estimates differed most when the behaviors are either socially stigmatized or illegal, suggesting that students' perception of privacy may be a critical determinant for adolescent reporting, and possibly, parental knowledge of the activities.

Differences in proportions and rankings may exist among countries based on access to health care for treatment of health symptoms and injuries, referral patterns related to use of substances, or management and expectations related to the school or home environment. For example, students may view bullying differently depending on the social norms either at school or home. A preliminary analysis comparing U.S. and Canadian data on medically attended sports and recreational injuries finds that U.S. students are less likely to be hospitalized overnight for similar injuries, even those resulting in comparable activity limitation or time lost from usual activities. HBSC researchers only asked about injuries for which attention was received from a doctor or nurse because most HBSC countries have some form of national health care systems. HBSC researchers generally didn't feel that any other measure was needed to obtain the prevalence measures for injuries. U.S. studies have shown that students without health insurance are less likely to report a medically attended severe injury compared to students with health insurance.[24] A survey of U.S. adolescents ages 13-17 who participated through invitations via the Internet and weighted to be as nationally representative as possible, given the sampling source, found that teens report sub-optimal experiences with health care providers.[25] The implications for seeking treatment, communication with health care providers, and consultation for risky behaviors were considered problematic, particularly for teens with the greatest needs for health care services.

The HBSC data can support a number of analyses not yet completed that address the relationships across both items left out of the international report and relationships among the many variables included in the report. The topics covered so far are just highlights based on research findings that U.S. students differ from their European and Canadian counterparts. Many commonalities among students throughout the HBSC countries can be found in the larger international report, available at the HBSC website: http://www.hbsc.org. In addition, the differences may tend to emphasize the negative aspects of student lives, while the positive health-related factors do not receive the attention warranted to help us understand what we are doing well to improve the lives of our youth. One example of this is our relative position on smoking behavior. Overall, the health-related factors included in this report or studied in separate analyses of the HBSC data do direct our attention to what we know from other research in order to improve programs directed to U.S. youth.

References

1. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). (Available at http://www.cdc.gov/ncipc/wisqars; last accessed July 2002.)

2. Hingson RW, Heeren T, Jamanka A, Howland J. Age of drinking onset and unintentional injury involvement after drinking. JAMA 2000;284:1527-1533.

3. Scheidt PC, Harel Y, Trumble AC, Jones DH, Overpeck MD, Bijur PE. Epidemiology of nonfatal injuries in children and youth. Am J Public Health 1995;85:932-938.

4. Burt CW, Overpeck MD. Emergency visits for sport-related injuries. Ann Emerg Med 2001;37:301-308.

5. Pickett W, Schmid H, Boyce WF, Simpson K, Scheidt PC, Mazur J, Molcho M, King MA, et al. Multiple risk behavior and injury: An international analysis of young people. Arch Pediatr Adolesc Med 2002;156:786-793.

6. Ross J, Wyatt W. Sexual behavior. In: Currie C. et al. (eds.) Health and Health Behaviour among Young People (International Report from the HBSC 1997/98 Survey). WHO Policy Series: Health policy for children and adolescents. Issue 1, 1998. (Available on the HBSC website at http://www.hbsc.org)

7. MacKay AP, Fingerhut LA, Duran CR. Adolescent Chartbook. Health, United States, 2000. Hyattsville, MD: National Center for Health Statistics, 2000. Hyattsville, MD: National Center for Health Statistics. 2000.[8]

8. U.S. Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

9. Blum RW, Beuhring T, Shew ML, et al. The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. American Journal of Public Health 2000;90:1879-1884.

10. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997;278:823-832.

11. Research Forum on Children, Families and the New Federalism. Lack of appropriate research leads to gaps in knowledge about children in immigrant families. The Forum 2002;5(1).

12. Harris KM. The health status and risk behaviors of adolescents in immigrant families. In: Hernandez DJ (Ed), National Research Council and Institute of Medicine. Children of Immigrants: Health, Adjustment, and Public Assistance. Washington, DC: National Academy Press, 1999;pages 286-315.

13. Yu SM, Huang ZJ, Schwalberg R, Overpeck MD, Kogan MD. Acculturation and the health and well-being of U.S. immigrant adolescents. J Adolescent Health (in press).

14. Knight EF, Castillo DN, Layne LA. A detailed analysis of work-related injury among youth treated in emergency departments. Am J Industrial Medicine 1995;27:793-805.

15. Castillo DN, Malit BD. Occupational injury deaths of 16 and 17 year olds in the US: Trends and comparisons with older workers. Injury Prevention 1997;3:277-81.

16. National Academy of Sciences Committee on the Health and Safety Implications of Child Labor. Protecting Youth at Work: Health, Safety, and Development of Working Children and Adolescents in the United States. Washington DC: National Academy Press, 1998.

17. U.S. Department of Labor. Report on the Youth Labor Force. Online report released June 2000 and revised, November 2000. (Available at http://www.dol.gov/dol.topic/youthlabor; last accessed January 2003.)

18. U.S. Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville, MD: U.S. Public Health Service, 2001.

19. Grunbaum JA, Kann L, Kinchen SA, Ross JG, Gowda VR, Collins JL, Kolbe LJ. Youth risk behavior surveillance: National Alternative High

School Youth Risk Behavior Survey, United States, 1998. J School Health 2000;70:5-17.

20. Guttmacher S, Weitzman BC, Kapadia F, Weinberg SL. Classroom-based surveys of adolescent risk-taking behaviors: Reducing the bias of absenteeism. Am J Public Health 2002;92:235-7.

21. Kann L, Brener ND, Warren CW, et al. An assessment of the effect of data collection setting on the prevalence of health risk behaviors among adolescents. J Adolescent Health 2002;31:327-335.

22. MacKay AP, Fingerhut LA, Duran CR. Adolescent Health Chartbook. Health, United States, 2000. Hyattsville, MD: National Center for Health Statistics, 2000.

23. Brener ND, Kann L, McManus T, Kinchen SA, Sundberg EC, Ross JG. Reliability of the 1999 Youth Risk Behavior Survey questionnaire. J Adolescent Health 2002;31:336-342.

24. Overpeck MD, Kotch JB. Effect of access to care on medical attention for injuries. Am J Public Health 1995;85:402-404.

25. Foundation for Accountability. A Portrait of Adolescents in America, 2001: A report from the Robert Wood Johns Foundation National Strategic Indicator Surveys. Princeton, NJ: The Robert Wood Johnson Foundation, 2002.

SUMMARY

SUMMARY

The U.S. participates in the HBSC study in order to improve adolescent health through programs and research targeted to provide appropriate health-related services. By viewing our youth's health within the context of family, school, peers and culture, we learn more about the larger community within which U.S. programs must work to be effective. International comparisons show underlying characteristics that are common to adolescents within developmental stages that are common to all nationalities. Individual country differences highlight health measures and related behaviors that suggest more local cultural, environmental, socio-demographic influences. This report responds to two questions:

- *What important information did we learn about common adolescent health characteristics, and about U.S. adolescents specifically, that we didn't already know?*
- *What relevant U.S. or international research addresses the factors underlying the highlighted health issues?*

Previous chapters summarize some of the relevant research for each topic, using primarily U.S. studies performed at the national level or studies based on HBSC research. The following summary presents highlights of HBSC findings addressing the question about what we learned.

What did we learn?

Overall health and well-being:

Adolescence is generally considered a time of good health; levels of illness and chronic disease are generally low, and injuries present the greatest threat to adolescents' health. However, how students feel on a daily basis, both physically and psychologically, may directly affect the success of their transition through adolescence. Their perceptions of health, self-confidence and satisfaction with life reflect the level of biological and psychosocial stress and anxiety that they experience.

- Boys tend to report somewhat better health than girls in all countries, with the proportions not feeling healthy increasing between ages 11 and 15 years for both genders. The U.S. ranks among the leading countries in reports of not feeling healthy, ranking seventh highest for boys and thirteenth for girls (at 8 percent and 13 percent, respectively). Other countries (or regions) with such high levels are primarily Eastern European and in the Russian Federation.

- Similar comparison levels are shown in reports of not feeling happy, with the girls less likely to feel happy in all countries as students age. U.S. boys rank seventh among countries for not feeling happy (at 19 percent), and girls rank eleventh (at 25 percent) with proportions ranging across countries from 5 percent to 42 percent of boys and 9 percent to 47 percent of girls. At the same time, U.S. students are no more likely to feel lonely than students in other countries.

- Students in the U.S. rank highest or among the top four countries in prevalence of stomachache, backache, headache, difficulty sleeping, feeling tired in the morning and feeling low at least once a week. More than 40 percent of U.S. females report backaches or stomachaches at least weekly; 57 percent report equally frequent headaches. Almost half of U.S. girls and one-third of boys report feeling low once a week or more. More than one-fourth of both girls and boys report having sleep difficulties at least once a week.

Relatively high reporting of medication use by U.S. students for headache, stomachache, and difficulty sleeping support the reports of elevated U.S. levels of physical symptoms.

Fitness

Fitness contributes to overall health and well-being through exercise, diet, lifestyle factors, and maintaining a healthy body and body image.

- Most U.S. students exercise twice a week or more but still rank in the bottom among all countries for frequency of exercise. Of those who exercise, U.S. students rank in the middle for time spent exercising.

- U.S. students are more likely to consume french fries and soft drinks with sugar than students in almost all other countries. U.S. students are also among the lowest-ranking in the proportion who eat fruit daily, but are in about the middle range for daily consumption of candy or chocolate. Throughout HBSC countries, students who spend more hours watching TV or playing computer games are more likely to consume soft drinks, sweets and potato chips, particularly among younger students and boys.

- Across all countries girls are more likely than boys to diet or feel that they should, and those who diet are more likely to eat fruit. U.S. students were more likely to be on a diet, or to feel that they should, than students in all other countries: 62 percent of U.S. girls and 29 percent of boys. Dieting may be based on a positive desire to change behavior and to reduce risk of being overweight, or it may reflect unrealistic self-images. The latter may result in unhealthy behaviors, such as anorexia and bulimia, that deprive girls of necessary nutrients, leading to long-term risk of osteoporosis and other serious conditions.

Family and Peer Relationships

Parent-child relationships, family structure, and peer group relations are associated with adolescent health and health behaviors. Family and peer relationship measures are indicators of current social resources, support, and communication. Family structure and stability in living arrangements are also strong predictors of supportive resources and family communication. Positive, supportive family and peer relationships are needed to maintain health and healthy behaviors. Time spent with friends after school may reflect a number of different activities within the peer environment, depending on how the time is used. It may also reflect time available to students for after-school gatherings, including the effects of transportation systems.

- The proportions of 15-year-old students living with both parents ranged from 89 percent in Israel and Greece to 53 percent in Greenland. U.S. students rank third from last in the proportion of students who live with both parents at age 15 (at 62 percent), with slight decreases from age 11 (at 67 percent). The U.S. has the highest proportion of students at age 15 years who live with single parents (23 percent) and ranks fourth for the proportion living with step-parents (13 percent).

- About one-third of U.S. students have difficulty talking to their mothers about things that really bother them, with increasing difficulties as they grow older. While ranking among the top three countries for difficulty with maternal communication at all ages, U.S. proportions are only slightly higher than average among all countries. Across countries, 28 percent of 15-year-olds on average reported difficulties talking to their mothers, ranging from 16 to 36 percent. Few countries show marked gender differences for difficulty talking with mothers.

- Across all countries, girls have more difficulties talking to fathers about things that really bother them than boys, and more students of both genders report difficulties talking to fathers than to mothers. The difficulties increase with age in all countries. The U.S. ranking compared to other countries deteriorates with age, with 53 percent of U.S. girls and 42 percent of boys at age 15 reporting difficulty communicating with their fathers, proportions much higher than reported for maternal communication.

- U.S. students rank comparatively high in finding it easy to make new friends (at about 85 percent of students). At the same time, they are among the least likely to find the students in their classes to be kind and helpful. Slightly more than one-third of U.S. students report that other students in their classes are always or often kind and helpful, compared to about 90 percent in Portugal and an average of about 50 percent among all countries. These findings raise questions about the social context in which students make friends and other school-related factors that may inhibit a supportive peer environment.

- Across all countries, boys are somewhat more likely than girls to spend time with friends after school at least 4-5 days a week. About one-third of U.S. students spend this much time with friends after school, ranking in the lowest third of countries. Across countries, the ranges are from 30 percent of boys and 18 percent of girls in Denmark to 68 percent of boys and 51 percent of girls in Greenland.

School Environment

Research emphasizes the link between students' perceptions of school and their motivation, achievement, and behavior.[1,2,3] Students who like and feel connected with school may be more motivated to achieve academically and less motivated to engage in anti-social behavior than students who feel disconnected from it. Schools also provide a health-promoting environment, both directly through health education and indirectly by providing opportunities for healthy nutrition and physical activity.[4]

- A cross-country HBSC analysis of students' perception of school shows that they are satisfied with school when they take part in setting school rules, get needed support from teachers or other students, and perceive high expectations from teachers and parents.[5] Across countries, students report a lower quality of life when they are not satisfied with school and do not feel supported by other students.

- Across countries, girls like school more and consider rules to be fair more often than boys. Liking school a lot tends to decrease with age. Among all countries, less than half of students report that they like school a lot, ranging from 40 percent of girls and 34 percent of boys in Latvia to 5 percent or less for either gender in the Czech Republic and Finland. The proportion of U.S. students who are enthusiastic about school is among the best of countries, at 18 percent, even though about four out of five U.S. students like school only a little, not very much, or not at all.

- Pressure from school work increases with age across all countries. U.S. students rank second in reports of feeling a lot of pressure from school. U.S. students report perceptions of their own performance as very high compared to other students in their class (ranking fourth among countries). However, U.S. students are no more likely than students in other countries to feel that either teachers or parents expect too much of them at school; and rank tenth in feeling that students are treated too severely or strictly at their school.

- U.S. students at all ages are among the least likely to feel that their classmates are kind and helpful, ranking third from last. Only 39 percent of U.S. girls and 35 percent of boys find students in their classes to often or always be helpful. The range across countries is from about 30 percent to 90 percent with a median of more than 50 percent.

- U.S. students are among the least likely to feel that they participate in making rules at school, ranking fifth from last. Only one-fifth of U.S. students agree or strongly agree that students in their school take part in making rules. This compares to a cross-country range of about two-thirds of Swiss students who feel they take part in rule-making to less than one in five in Finland, the Russian Federation, Czech Republic and Flemish Belgium. In addition to its probable effects on students' sense of school connectedness, educating students to be part of the rule-making process is necessary preparation for civic responsibilities, including voting.[6,7] Research also indicates that students who feel unconnected to school are more likely to abuse substances, engage in violence, and become pregnant.[8,9]

Alcohol and Smoking Behavior

Alcohol and tobacco are among the top contributors to mortality and morbidity in the U.S.[10] Associations of smoking and drinking with both behavioral and health-related conditions are shown in the HBSC international report, as well as other studies considering multi-risk taking behaviors and effects such as injuries.[11]

- A cross-country analysis described in the international report among all HBSC youth shows a number of associations between use of the two substances:
  - Students who ever experimented with smoking are more likely to have experience with drinking alcohol, including being drunk, as well as to dislike school and be truant from school, regardless of age or gender. Students who ever smoked experimentally report feeling less healthy, spend more time with friends after school and in the evening, and have more difficulties talking to their fathers, and for girls only, with their mothers.
  - Overall, daily smokers are also more likely to drink or get drunk more frequently. However, the strong association between smoking and drinking did not hold in each country. Even though daily smokers are more likely to drink, drinkers are not necessarily more likely to smoke in all countries. Still, there are strong associations between being really drunk at least twice and daily smoking.
  - Daily smokers are more likely to be truant more often and to dislike school. Older students who drink frequently are more likely to spend time with friends after school 4-5 days a week and in the evening and are more like to be truant

from school and dislike school. Besides the associations with time spent with friends and school problems, older girls who smoke also report feeling less healthy.

- Across countries, experimental smoking increases with age, so that 60-70 percent of all 15-year-olds report having smoked at least once. Countries with fewer students experimenting at age 11 have fewer students experimenting at age 15 as well. Boys are generally more likely to smoke experimentally than girls, although there are variations in the gender patterns among countries.

- Daily smoking increases substantially with age, with prevalence varying widely among countries. About half of the countries show more females smoking daily than males. By age 15, proportions of girls smoking daily ranged from a high of 56 percent in Greenland to 6-8 percent in Lithuania, Israel, and Estonia, with 12 percent for U.S. girls. For boys, 45 percent smoked daily in Greenland compared to only 13 percent in Portugal and the U.S. By age 15, U.S. students are among the lowest ranking countries for daily smoking, at fifth lowest for both genders combined.

- At age 15 years, boys in all countries are more likely to drink alcoholic beverages than girls. Some countries varied their relative rankings as students became older, with smaller gender differences among younger students, including students in the U.S. U.S. students rank seventh highest among all countries in the percentage of 11-year-olds who drink at least weekly, and U.S. 13-year-olds rank 11th for weekly drinking. By age 15, the U.S. ranking falls to the lowest third of countries.

- In nearly all countries, 15-year-old boys are more likely than girls to have been drunk on two or more occasions. Generally, countries with high proportions of students who drink at least weekly are also more likely to have students who have been drunk on two or more occasions. The age trends for drunkenness within countries are consistent with the proportion of students who report have been drunk by age 15. Those with high proportions of young students having been drunk at age 11 had high proportions at age 15; and conversely, those with fewer students at age 11 had lower proportions at age 15. U.S. students were among the lowest third of countries for drunkenness, with 28 percent of girls and 34 percent of boys having been drunk at least twice by age 15.

Violence

Since U.S. youth homicide rates are the highest among industrialized countries and suicide rates are among the highest, our concern for violent behavior is strong.[12] U.S. homicides and suicides are most likely to involve firearms, accounting for more than 80 percent of all firearm fatalities to children and youth under age 15 in a study combining manner of death in 26 industrialized countries.[13] Shootings at school have heightened our awareness of school safety.[14]

- U.S. students rank eighth from highest among HBSC countries for students who never or rarely feel safe at school (30 percent). Fewer than two out of five U.S. students always feel safe. However, in only five countries did 50 percent or more students always feel safe at school.

- In questions about weapon-carrying, other HBSC countries felt that the prevalence of carrying guns was so small that estimates would not be reliable. Therefore, weapon carrying questions did not ask specifically about firearms. Other countries also did not expect that asking about carrying weapons *at school* would yield reliable estimates due to low prevalence, so the question is not specific to school safety concerns. Among the few countries asking about fighting or weapon-carrying (gun, knife or club) for self protection, U.S. students are no more likely to fight or carry weapons. As in other countries, U.S. students are more likely to fight with friends, family members or acquaintances than with strangers.

- Analysis of the U.S. HBSC data on student in grades 6-10 shows strong associations between involvement in frequent bullying with violent behavior, including weapon-carrying and having four or more fights a year.[15] Those who report bullying or being bullied at least once a week are more likely than other U.S. students to report carrying a weapon for protection either at school or away. The likelihood of weapon-carrying was particularly high when students either bullied others or were bullied away from school grounds. Bullies (including bullies who are also victims of bullying by others) are most likely to carry weapons for self-defense.

- Another study using only the U.S. HBSC data shows the significantly poorer psychosocial adjustment of students who are bullies, bullied, or both a bully and a target of bullying at least once a week or more.[16] The U.S. study asked about bullying both at school and away from school, with almost 30 percent of students reporting moderate or frequent involvement as either bullies or victims.

- The international HBSC study asked only about bullying that occurred at school but not other locations. Overall, U.S. youth at all ages (11, 13 and 15 years) are no more likely to be involved in bullying others at school than in other countries. Our students rank in about the middle among students who are bullied at school at least sometimes. However we rank ninth at all ages and seventh at age 13 among all countries for students who are bullied frequently (at least once a week or more often) at school. Our students are also among the higher ranking countries for students who report that they bully others at school frequently. More than one out of twenty U.S. students at all ages report bullying others or being bullied at least once a week or more often at school. Proportions are higher at ages 11 and 13 than at age 15.

The many comparisons in this and the international report show a number of commonalities across countries, including consistent gender differences. The differences summarized above for U.S. students may direct us to areas requiring further research and programmatic attention. They also point to areas where U.S. programs and policies appear to show successful reductions in unhealthy behaviors. Some of the most important differences are highlighted below:

- U.S. youth are more likely to have very frequent episodes (at least once a week) of stomachache, backaches, headaches and difficulty sleeping than students in almost all other HBSC countries. U.S. students are also more likely to feel tired in the morning or feel low compared to students in other countries. These health-related symptoms may be partially associated with our students' general fitness levels related to diet and exercise since we are also more likely to eat items such as french fries or to drink sodas with sugar, while generally exercising less frequently. They may also stem from other activities and school schedules not measured or analyzed in the HBSC.

- Research cited in each of the chapters shows that appropriate supportive networks are critical for positive development of health and healthy behaviors. The ability of U.S parents to provide support may be relatively limited by the high proportions of students living with single and step-parents. Communication with parents, both mothers and fathers, appears to be more difficult for our students, with far greater difficulty reported in communicating with fathers than mothers and particularly for boys. U.S. students find it easy to make new friends, while they are among the least likely to find students in their classrooms to be kind and helpful. U.S. students rank second in reports of feeling a lot of pressure from school at the same time that their perceptions of their own performance is very high compared to other students in their classes. Our students are no more likely than students in other countries to feel that either teachers or parents expect too much of them at school; and rank tenth in feeling that students are treated too severely or strictly at their school. The proportion of U.S. students who are enthusiastic about school (like it a lot) is among the best of countries, even though about four out of five U.S. students like school only a little, not very much, or not at all. Across all countries girls like school and consider rules to be fair more often than boys. However, U.S. students are among the least likely to feel that they participate in making rules at school.

- Findings on student substance use (smoking and drinking) are generally positive, but with somewhat mixed results. Our 15-year-old youth are generally less likely to smoke than students in almost all other countries and rank in about the middle range for drinking alcohol at least once a week. The latter is consistent with our ranking for students who have been drunk at least twice.

- U.S. students rank relatively high for never or rarely feeling safe at school. Fewer than two out of five U.S. students always feel safe. Our students rank in about the middle among students who are bullied at school at least sometimes. However, we rank ninth at all ages and seventh at age 13 among all countries for students who are bullied frequently (at least once a week or more often) at school. The U.S. is also among the higher-ranking countries for students who report that they bully others frequently. Among the few countries asking about fighting or weapon-carrying (gun, knife or club) for self protection, U.S. students are no more likely to fight or carry weapons. As in other countries, U.S. students are more likely to fight with friends, family members or acquaintances than with strangers.

What was left out?

The international study did not address issues related to race, ethnicity or immigration. Historical immigration patterns and the extent of diversity are quite different in the U.S. compared to most European countries. Nearly 14 million children under 18 years of age in the U.S. are immigrants or have immigrant parents in 2000, with almost one in six children living with a foreign-born householder.[17] Other U.S. studies among adolescents and other ages have shown differences in health-related attributes and behaviors by race and ethnicity but little research has been completed on effects of acculturation among immigrant youth within the context of family, peer, and school relations.[18] One Add Health study shows that immigrant children born in other countries generally have significantly fewer physical health problems and risky behaviors than either native born children of immigrants or non-Hispanic white youth.[19] Both published[20] and preliminary analysis of the U.S. HBSC data on youth living in homes where the primary language spoken is other than English shows that they are at an elevated risk for psychosocial and parental risk factors compared to non-Hispanic white English-speakers. Adolescents who speak other languages at home, exclusively or in combination with English, are particularly likely to report feelings of vulnerability, exclusion, and lack of confidence, such as alienation from classmates, being bullied at school, and concerns about school and parental support. However, preliminary analysis of the U.S. HBSC data on Asian American students who spoke languages other than English at home also shows them to be less likely to use substances such as cigarettes, chewing tobacco, marijuana, or to have ever experimented with alcohol - indicating that lower levels of acculturation may also be protective for some high-risk health-related behaviors.

The potential exclusion of higher-risk teens from school-based surveys, as discussed in the previous chapter, indicates that generalization of results from these nationally representative samples can be made only for the more normative populations of teens.[21,22] Comparisons across countries of the highest risk youth with chronic illnesses, disabilities, or instability in living arrangements, including homelessness, etc., can't be made in this study. Thus, the levels of risk and associations with family, school, and peer relationships reported here may be lower than those of the adolescent populations as a whole. Regional and language differences within countries cannot be compared either. This chartbook is only a snapshot of the majority of teens attending schools in the 27 European and North American countries represented by the HBSC.

Even though questions were tested across countries and language adjusted to measure the same concepts, local culture may still affect teens' interpretations of the questions asked. Beyond the issues of higher prevalence of health-related behaviors reported by teens compared to parental reports in household surveys discussed in the previous chapter,[23] some new questions have been raised. We know very little about the way that adolescents think about their health and whether their perceptions parallel that of adults. Particularly pertinent are the somatic symptoms of stomachache, backache, headache, and feeling tired or the depressive affect questions such as feeling low, lonely, or unhappy. Adolescent assessment of whether or not they feel healthy may also change with their development. We do not know whether those who rate themselves as healthy tend to maintain that self-image, or whether the self-image varies over time, in a manner similar to adults, as they begin to experience a greater number of symptoms and health problems. This may be an important research question for assessing the functional health status of our teens.

What the research shows:

The overarching goal of the HBSC study is to understand adolescent health and health-related behavior in the context of family, school, and peers, using cross-national comparisons to demonstrate common factors and highlight differences associated with cultural influences. As with all cross-sectional studies or studies based on questions asked at one point in time associations found among the many factors included in this report cannot be used to infer cause and effect. Comparisons of multiple dimensions across health and health-related behaviors provide highlights of the individual and social dimensions of our adolescents' lives. In-depth studies that follow students and their families from the prenatal stage are needed to understand interactions at each developmental phase and the progression of influences on current health-related behaviors. Research specific to limited behaviors has demonstrated that risk and protective factors vary in predictive power depending on when in the course of development they occur. As children move from infancy to early adulthood, some risk factors will become more important. For example, substance use as a risk factor or predictor of violence is much stronger at age 9 than it is at age 14.[24,25] These developmental pathways present a challenge not only to understanding cause and effect but also to developing strategies for prevention.

Only two nationally representative U.S. studies currently follow the same adolescents over time: 1) the National Longitudinal Survey of Youth 1997 (NLSY97), which focuses on transitions into the labor market and adulthood, and 2) the National Adolescent Study of Health (Add Health), which focuses on forces that influence adolescents' behavior, particularly in the context of families, peers, schools, neighborhoods and communities.[26] The Add Health study is beginning to inform us about the family, peer and school relationships which both influence and are influenced by individual student health-related behaviors over time.

Both the cross-national analyses from the HBSC, based on extensive work in Europe, and the more in-depth longitudinal, multi-level research of the U.S. Add Health study cited in previous chapters show that feelings of support and connectedness to family, school, and peers are highly associated with positive health and behaviors. Whether addressing health and depressive symptoms, fitness, diet, attitudes toward school, smoking and alcohol use, or violence, research demonstrates that students' feeling of being connected to positive support systems makes a difference.[4,8,9,26] While the influence and educational role of the family may decrease as students move toward independence, the family's role throughout early life in shaping the health behavior of adolescents is critical and well-documented.[26] Similar thorough review and documentation of research demonstrating what we know about influences on health and health behavior in children during middle childhood or adolescents has not been completed, although a synthesis of research recommendations for adolescents was completed in 1999.[27]

The HBSC study examined the association of students' health-related behaviors among all countries with the strength of their relationships and the lines of communication with their parents and their peers.[28] The Add Health study shows that the physical presence of a parent in the home at key times, as well as parental connectedness (e.g. feelings of warmth, love, and caring from parents), and parental expectations are associated with adolescent health behavior.[8]

Pro-social peer networks have been shown to have positive associations with health-related behaviors. Adolescents' affiliation with "prosocial" peers has been shown to be associated with abstinence from alcohol use, delayed initiation of sexual activity, and protective against violent behavior among youths.[29,30,31] The causal relationship between friends' risk behavior and adolescents' own behavior is important to consider in examining adolescent health behavior. Adolescents may choose friends who engage in similar types of behavior,[32] or they may be influenced by the behavior of friends.[33] Research from the longitudinal Add Health study addresses the multifaceted nature of friendship networks as they affect the relationship between peer delinquency and an adolescent's own delinquency.[34]

The same need for supportive school environments is demonstrated through the HBSC, Add Health and other research. Add Health studies emphasize that feeling that one belongs and is cared for at school is a crucial requirement for student health and well-being.[9] The issues of supportive families, peer networks, and schools need to be addressed in areas of bullying, exclusionary social cliques, and gangs since students may be turning to more anti-social peer networks for the connectedness that the HBSC and other research studies show that they need. Findings that strong school and family ties protect teens from violence, substance use, suicide and early sex may also be found in a briefing paper prepared by NICHD.[35]

Research shows us that it is even more difficult to measure effects of neighborhoods, communities and the larger cultural influences. These influences represent complex interactions of biological, social and physical environmental factors though the various developmental stages of children and youth, including prenatal influences and family genetics. The National Research Council and Institute of Medicine report (NRC/IOM), *From Neurons to Neighborhoods*, emphasizes the complexity of relating these multiple influences during early childhood development to specific interventions to reduce unhealthy behavior.[36] Adolescent health behaviors measured between ages 11 and 15 years reflect not only genetic, family and early and middle childhood exposures, but effects of puberty, maturation as well as direct interactions with peers, neighborhoods, and communities.

Over the past few decades, the amount of research on adolescent health has grown considerably. A review of recent research findings provides a synthesis of lessons learned and recommendations from research reports.[27] The review identifies broad-based trends in research priorities, describes gaps in the existing knowledge base, and suggests approaches for developing and implementing a national adolescent health research agenda. Research priorities are examined in four major content areas: adolescent physical, psychological and social development; social and environmental contexts; health-enhancing and health-risk behaviors; and physical and mental disorders. Cross-cutting themes identified as priorities for directions of future research include:

- Applying a developmental perspective to adolescent health research.
- Emphasizing "health" in adolescent health research.
- Using multiple influence models for understanding and improving adolescent health and development.
- Recognizing the diversity of the adolescent population.

Supportive Programs and Prevention

Prevention strategies and interventions targeted to teens become more complex when considering the issues identified as priorities for research listed above and the multiple venues within which youth interact. The Committee on Community-Level Programs for Youth of the NRC/IOM assessed programs that may serve as models to promote positive outcomes in youth by identifying community interventions with sufficiently strong evidence of effectiveness.[37] These programs are located in communities in which youth live: neighborhoods, block groups, towns and cities, as well as nongeographically defined communities based on family connections and shared interests or values. The Committee was not able to separate programs performed within schools since many of the best-regarded programs craft explicit links with both home and school, with some even taking place during normal school hours in the school building itself. Two of the focus areas of the HBSC, bullying behavior and substance use (smoking and alcohol), demonstrate how measuring individual health-related behaviors in only one venue, such as school, may lead our research and programs away from some of integrally linked venues where the behaviors and related psychosocial factors need to be addressed through community, family and professional partnerships to promote positive behaviors. An illustration is demonstrated by the two U.S. HBSC studies on bullying.[15,16] Part of the concern about bullying behavior is the involvement with physical violence. U.S. HBSC data analysis results show that weapon-carrying and fighting risks are higher for students involved in bullying away from school grounds than at school.[15] The U.S. survey asked about bullying behavior both at school and away. Comparisons to the remaining HBSC countries which asked only about bullying at school do not provide sufficient breadth to understand bullying and violence within the context of a youth's activities away from school in the community and at home. Not only do we need to address bullying behavior in school, but the findings should direct us to learn more about where, how, and why these events occur in order to address future preventive program efforts effectively.

The school environment as either a formal or informal venue for promoting healthy behaviors is appropriate and necessary,[4] but probably not fully sufficient for fully successful interventions.[37] This may be demonstrated by U.S. efforts to reduce smoking. The HBSC data on smoking among U.S. youth are a good example of positive changes resulting from effectively targeted research and programs. At age 15, U.S. students are ranked among those least likely in all HBSC countries to smoke daily, consistent with U.S. surveillance reports of decreases in teen smoking during the last several years.[38] U.S. ranking at age 15 years is low even though our students are equally as likely to experiment with smoking as students in other countries. The U.S. has devoted more than twenty-five years to applying basic public health principles to reduce smoking behavior among our youth. Evaluation of higher level interventions targeted to the general population (clean air ordinances, media messages) concludes that no single strategy has been successful on its own, and multiple approaches have the greatest chance of success.[39]

The National Initiative to Improve Adolescent Health by the Year 2010 (NAIIC 2010) was created to support collaborative action at the community, State and national levels. It was created to elevate the national focus on the health and well-being of adolescents and young adults. The goal is to comprehensively address the 21 Critical Health Objectives identified in Healthy People 2010.[40] Targeted objectives are based on measurable health behaviors and symptoms that are currently collected through national data sources enabling monitoring of change across time. NAIIC 2010 is facilitated by joint efforts of the Health Resources and Services Administration's Maternal and Child Health Bureau/Office of Adolescent Health (HRSA/MCHB) and the Centers for Disease Control and Prevention's Division of Adolescent and School Health. Supporting partners include university-based research organizations, State maternal and child health programs and adolescent health coordinators, and many health professional associations.

Beyond the measurable objectives that are the focus of NAIIC 2010, programs need to address the underlying supportive network required to improve adolescent health demonstrated through the research and findings described in this chartbook. The two sponsoring agencies of the HBSC study are responsible for conduct of research on the causes and prevention of disease and health behaviors leading to poor adolescent outcomes

(NICHD)[41] and for promoting and improving the health of adoelscents through effectively targeted programs (HRSA/MCHB/OAH).[42] Obviously, the HBSC focus on adolescents within the context of family, school, peer, neighborhood, community and larger cultural influences contributes to the efforts of those concerned about the future of our children and teens.

REFERENCES:

1. Roeser R., Eccles J.S. Adolescents' perceptions of middle school: Relation to longitudinal changes in academic and psychologial adjustment. Journal of Research on Adolescence. 1998;8:123-158.

2. Eccles JS, Wigfield A, Midgley C, Reuman D, MacIver D, and Feldlaufer H. Negative effects of traditional middle schools on students' motivation. Elementary School Journal. 1993;93:553-574.

3. Simons-Morton BG, Crump AD, Haynie DL, Saylor KE. Student-school bonding and adolescent problem behavior. Health Education Research. 2001;14:99-107.

4. Blum RW, McNeely CA, Rinehart PM. Improving the odds: The untapped power of schools to improve the health of teens. Minneapolis, MN: Center for Adolescent Health and Development, University of Minnesota; 2002.

5. Samdal O, Dur W. The school environment and health of adolescents. In: Currie C, Hurrelman K, Settertobulte W, Smith R, Todd J, Health and Health Behaviour Among Young People. WHO Policy Series: Health Policy for Children and Adolescents Issue 1. Copenhagen, Denmark: World Health Organization Regional Office for Europe, 2000.

6. Center for Civic Education. NAEP 1999 Civics Report Card to the Nation. Available at http://www.civiced.org: Last accessed January, 2003.

7. U.S. Department of Education. We the People...The Citizen and the Constitution. Program description available at http://www.ed.gov/offices/OSDFS: Last accessed January 2003.

8. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA. 1997;278:823-832.

9. McNeely CA, Nonnemaker JM, Blum RW. Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. J School Health 2002;72:138-146.

10. McGinnis JM, Foege WH. Actual causes of death in the United States. JAMA. 1993;270:2207-2212.

11. Pickett W, Schmid H, Boyce WF, Simpson K, Scheidt PC, Mazur J, Molcho, M, King MA, Godeau E, Overpeck MD, Aszmann A, Szabo M, Harely. Multiple risk behavior and injury: An international analysis of young people. Arch Pediatr Adolesc Med 2002;156:786-793.

12. World Report on Violence and Health. Geneva, Switzerland: World Health Organization: 2002. Available at: URL http://www.who.int/violence_injury_prevention. Last accessed on Oct. 3, 2002.

13. Centers for Disease Control and Prevention. Rates of homicide, suicide and firearm-related deaths among children 26 industrialized countries. Morbidity and Mortality Weekly Report 1997;46:101-105.

14. Gaughan E, Cerio JD, Myers RA. Lethal Violence in Schools: A National Study. Alfred, NY, Alfred University, 2001.

15. Nansel TR, Overpeck MD, Ruan WJ, Haynie DL, Scheidt PC. Relationships between bullying and violence among US youth. Arch Pediatr Adoesc Med (in press)

16. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton BG. Bullying behaviors among the U.S. youth: Prevalence and association with psychosical adjustment. JAMA 2001;285(16):2094-2100.

17. Schmidley AD. U.S. Census Bureau, Current Population Reports, Series P23-206. Profile of the Foreign-Born Population in the United States. Washington, DC: U.S. Government Printing Office, 2001.

18. Research Forum on Children, Families and the New Federalism. Lack of appropriate research leads to gaps in knowledge about children in immigrant families. The Forum 2002;5(1).

19. Harris KM. The health status and risk behaviors of adolescents in immigrant families. In: Hernandez DJ (Ed), National Research Council and Institute of Medicine. Children of Immigrants: Health, Adjustment, and Public Assistance. Washington, DC: National Academy Press, 1999, pages 286-315.

20. Yu SM, Huang ZJ, Schwalberg RH, Overpeck M, Kogan MD. Acculturation and the health and well-being of U.S. immigrant adolescents. J Adolescent Health (in press).

21. Guttmacher S, Weitzman BC, Kapadia F, Weinberg SL. Classroom-based surveys of adolescent risk-taking behaviors: Reducing the bias of absenteeism. Am J Public Health 2002;92:235-7.

22. Grunbaum JA, Kann L, Kinchen SA, Ross JG, Gowda VR, Collins JL, Kolbe LJ. Youth risk behavior surveillance: National Alternative High School Youth Risk Behavior Survey, United States, 1998. J School Health 2000;70:5-17.

23. Kann L, Brener ND, Warren CD. Et al. An assessment of the effect of data collection setting on the prevalence of health risk behaviors among adolescents. J Adolescent Health 2002;31:327-335.

24. U.S. Department of Health and Human Services. Youth violence: A report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services;2001, pages 42-52.

25. Dahlberg LL, Potter LB. Youth violence: Developmental pathways and prevention challenges. Am J Prev Med 2001;20(1S):3-14.

26. National Research Council and Institute of Medicine, Committee on National Statistics,. Longitudinal Surveys of Children. Washington, D.C., National Academy Press, 1998.

27. Millstein SG, Ozer EJ, Ozer EM, Brindis CD, Knopf DK, Irwin, CE, Jr. Research Priorities in Adolescent Health: An Analysis and Synthesis of Research Recommendations. San Francisco, CA: University of California, San Francisco. National Adolescent Health Information Center, 1999.

28. Currie C., et al (ed.). Health and Health Behaviour Among Young People. WHO Policy Series: Health Policy for Children and Adolescents, Issue 1. (Available at http://www.ruhbc.ed.ac.uk/hbsc).

29. Spoth, R., Redmond, C., Hockaday, C. and Yoo, S. Protective factors and young adolescent tendency to abstain from alcohol use: A model using two waves of intervention study data.

American Journal of Community Psychology. 1996;24:749-770.

30. Bearman, P., Brückner, H., Brown, B.B., Theobald, W., & Philliber, S. Peer Potential: Making the Most of How Teens Influence Each Other. Washington DC: National Campaign to Prevent Teen Pregnancy. 1999.

31. Group for the Advancement of Psychiatry. Violent behavior in children and youth: Preventive intervention from a psychiatric perspective. Journal of the American Academy of Child and Adolescent Psychiatry. 1999;38: 235-241.

32. Kandel DB. Homophily, selection, and socialization in adolescent friendships. American Journal of Sociology. 1978;84:427-436.

33. Keenan K, Loeber et al. The influence of deviant peers on the development of boys' disruptive and delinquent behavior: A temporal analysis. Development and Psychopathology. 1995;7:715-726.

34. Haynie DL. Delinquent peers revisited: Does network structure matter? American Journal of Sociology. 2001;106:1013-57.

35. Demographic and Behavioral Sciences Branch. Research on Today's Issues: Strong school, family ties protect teens from violence, drugs, suicide and early sex. Bethesda, MD: National Institute of Child Health and Human Development; 1998;Briefing Papers, Issue No. 8.

36. National Research Council and Institute of Medicine Committee on Integrating the Science of Early Childhood Development. From Neurons to Neighborhoods: The Science of Early Childhood Development. Washington, D.C., National Academy Press, 2000.

37. National Research Council and Institute for Medicine (2002). Community Programs to Promote Youth Development. Committee on Community-Level Programs for Youth. J Eccles and JA Gootman, eds. Board on Children, Youth and Families, Division of Behavioral and Social Sciences and Education. Washington DC: National Academy Press.

38. National Institute on Drug Abuse and University of Michigan Institute for Social Research. Monitoring the Future Study. Available at: URL http:nida.nih.gov/drugpages/MTF and http://www.monitoringthefuture.org.

39. National Academy of Sciences Committee on Health and Behavior. Health and Behavior: The interplay of biological, behavior, and societal influences. Washington, DC: National Academy Press; 2001. Available at http://nap.edu.

40. Healthy People 2010. Critical Objectives for Adolescents and Young Adults. List available at http://youth.ucsf.edu/nahic.

41. National Institute of Child Health and Human Development. From Cells to Selves: Strategic Plan 2000. Available at: http://www.nichd.nih.gov/strategicplan/cells/strategicplan.pdf.

42. Health Resources and Services Administration, Maternal and Child Health Bureau. Program goal descriptions available at: http://www.hrsa.mchb.gov.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

☐ This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☒ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").

EFF-089 (1/2003)